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FUEL ECONOMY OF MOTOR VEHICLES

Fuel Economy Regulations and Test Procedures for 1977 and Later Model Automobiles

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 600]

[FRL 540-1]

FUEL ECONOMY OF MOTOR VEHICLES

Fuel Economy Regulations and Test Procedures for 1977 and Later Model Automobiles

On December 22, 1975, the President signed the Energy Policy and Conservation Act ("EPCA") into law. EPCA requires the EPA Administrator to prescribe rules for the fuel economy labeling of 1977 and later model year automobiles and for the distribution of a fuel economy booklet by auto dealers. Manufacturers are required to label each 1977 and subsequent model year automobile and dealers must maintain the label on the vehicle. Each label is required by the statute to include (1) the fuel economy of the automobile, (2) the estimated annual fuel cost associated with the operation of the automobile, and (3) the range of fuel economy of comparable automobiles. EPA is proposing that labels list three fuel economy values: city, highway, and combined.

EPA is soliciting comments on the form, content, and language of the labels and the use of graphics as they relate to the manufacturer's ability to implement the labels and the usefulness to the consumer.

The most significant issue in the proposed regulations is the method of determining comparability of automobiles to implement the requirement of the Act that fuel economy labels will display the fuel economy range of all comparable automobiles. The Preamble describes two approaches, one utilizing wheel base as a determinate, the other, an interior/exterior size or volume approach, using a combination of interior and exterior volume indices. Comments on a number of subsidiary issues regarding comparability are also requested:

(1) The number of comparable classes of vehicles and their cut points.

(2) The names given to these various classes.

(3) The appropriate weighting factor between interior and exterior volumes if a volume approach is used.

On December 22, 1975, the President signed the Energy Policy and Conservation Act, Pub. L. 94-163, 89 stat. 871. Title III of this Act amends the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 1901 et seq. ("the Act") to provide that for all 1977 and later model year automobiles, manufacturers shall cause to be affixed and dealers cause to be maintained, a label bearing fuel economy information for that automobile. The Act further directs the EPA Administrator to prescribe rules pertaining to the form and content of such labels, and the manner in which the labels must be affixed. The Administrator must also compile and prepare a simple and readily understandable booklet containing data on fuel economy of automobiles manufactured in each model year. Automobile dealers are required, according to rules to be prescribed by the Administrator, to make these booklets available to prospective customers.

The regulations proposed below fulfill the requirements imposed upon EPA by the Energy Policy and Conservation Act with respect to the labeling of 1977 and subsequent model year automobiles. EPA has coordinated and consulted with the Department of Transportation, Federal Energy Administration (FEA), and the Federal Trade Commission, on the preparation of these proposed rules as required by EPCA.

It is proposed that Part 600 of 40 CFR Chapter I, be amended as described below.

I. *Basic Definitions.* Several key definitions are used throughout this preamble. An introductory discussion of the terms will aid in understanding the proposed rules. All of the following terms are defined in the text of the regulations.

The Act requires that all automobiles be labeled with a sticker displaying fuel economy information. An *automobile* is defined as any 4-wheeled vehicle, propelled by fuel, which is manufactured primarily for use on public streets, roads, or highways and which is rated at 6000 pounds gross vehicle weight (GVW) or less. This definition would include types of cars and trucks which are currently certified by EPA as "light-duty" and are included in the *1976 EPA/FEA Gas Mileage Guide for New Car Buyers.* Present EPA certification regulations define a *light duty vehicle* as a passenger car or passenger car derivative capable of seating twelve passengers or less. A *light duty truck* is defined in the same regulations as being designed primarily for the purpose of transportation of property and rated at 6000 pounds GVW or less. Therefore all light duty vehicles and all light duty trucks (as defined for emissions certification purposes) will be required to display a fuel economy label except those trucks with a GVW of greater than 6000 pounds. (On February 12, 1976, EPA proposed rules extending the GVW upper limit for light duty trucks to 8500 pounds beginning with the 1978 model year, 41 F.R. 6279. Trucks above 6000 pounds GVW will be required to be fuel economy labeled according to these proposed regulations when the Secretary of Transportation promulgates rules applicable to these vehicles for some future model year).

For fuel economy labeling purposes, the first major subdivision of a manufacturer's product line is car line. A *car line* denotes a group of vehicles within a make or car division which has a degree of commonality in construction and in most cases corresponds to the general marketing name of the vehicles. Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics such as roof line, number of doors, seats or windows, although station wagons are considered distinct car lines from sedans. For example, in the *1976 EPA/FEA Gas Mileage Guide for New Car Buyers,* Dodge, a division of Chrysler Corporation, has listed seven car lines: Dart, Aspen, Aspen Wagon, Coronet/Charger, Coronet Wagon, Monaco, and Monaco Wagon.

A subdivision of car line and a major level for reporting fuel economy is model type. A *model type* is defined as a unique combination of car line, basic engine, and transmission class. Thus, within a car line, a number of model types may exist depending upon the availability of various *basic engines* (displacement and number of cylinders, fuel system, and catalyst usage) and the transmission classes offered (automatic or manual). Each line entry in the Buyer's Guide corresponds to a unique model type.

Although weight is not a model type determinant, it does figure into the calculation of the fuel economy for each model type. For testing and calculation purposes, each manufacturer's product line is subdivided into base levels. A *base level* is a unique combination of inertia weight class, basic engine, and transmission class. Note that base level is nearly the same as model type except that weight is substituted for car line. The fuel economy for any model type is simply the sales-weighted, harmonic average of fuel economy of each base level comprising the model type. Again using the Chrysler example, a typical base level would be 3500 pound, 318 cubic inch, 8 cylinder engine with 2 barrel carburetor, catalyst, and manual transmission.

Another level of delineation is used to identify individual test vehicles. Base levels are subdivided into vehicle configurations. A *vehicle configuration* is defined as a unique combination of inertia weight class, basic engine, and transmission class (all of which determine a base level) plus engine code, transmission configuration, and axle ratio. *Engine code* goes beyond the definition of basic engine by isolating different variations of carburetor, distributor, and other key engine and emission control system components. *Transmission configuration* considers more than just manual or automatic and distinguishes transmissions primarily by their numbers of forward gears, e.g., three-speed manual and four-speed manual. An example of a vehicle configuration is 3500 pound, 318 cubic inch, 8 cylinder, 2 barrel carburetor engine of engine code A, with catalyst, 3-speed manual transmission and 3.23 axle ratio.

II. *Fuel Economy Labels.* The Act requires that manufacturers label each 1977 and subsequent model year automobile and that dealers maintain the label on the vehicle. Each label is required to indicate (1) the fuel economy of the automobile, (2) the estimated annual fuel cost associated with the operation of the automobile, and (3) the range of fuel economy of comparable automobiles. All of this information is to be determined according to rules prescribed by the Administrator. EPA is also responsible for specifying, by rule, the form and content of the labels and the manner in which they are affixed.

Appendix IV to these regulations provides samples of the label formats which EPA is proposing. The Agency is soliciting comments on the form, content, and

language of the labels as they relate to the manufacturer's ability to implement the labels and the usefulness to the consumer of the format. Although no sample is provided, EPA is also considering requiring the use of graphics on the label to increase the consumer's comprehension, and comments on this point are requested.

The proposed labels are of two basic types, general and specific. The *general label* displays sales-weighted, fuel economy estimates for a model type—a unique combination of car line, engine displacement, number of cylinders, fuel system, catalyst usage, and transmission type (manual or automatic). The *specific label* differs from the general label by a more detailed description of the engine (although not identified on the label), weight of the vehicle, axle ratio, and the number of forward speeds of the transmission. A specific label contains the fuel economy of a unique vehicle configuration.

Both general and specific labels list three fuel economy values: city, highway, and combined. The city fuel economy value is determined from operating one or more test vehicles over the driving schedule in the Federal Emission Test Procedure, which is designed to simulate an average trip of 7.5 miles in an urban area at an average speed of just under 20 miles per hour. The city schedule consists of a cold and hot engine startup and vehicle operation on a chassis dynamometer. The highway fuel economy value is measured by operating one or more test vehicles over the driving schedule in the Federal Highway Fuel Economy Test Procedure, which is designed to simulate non-metropolitan driving at an average speed of 48.6 miles per hour and a maximum speed of 60 miles per hour. The highway schedule consists of a hot-engine startup and vehicle operation on a chassis dynamometer. The third value displayed is a combined fuel economy value which is the harmonic average of the city and highway fuel economy values, weighted 55 and 45 percent, respectively.

Each automobile is required to be labeled with a general label unless the manufacturer elects to apply a specific label. If a manufacturer choose to utilize a specific label, he is also required to apply specific labels to all automobiles of the same model type, i.e., all those automobiles that would have been covered by a single general label. With the exception of this last requirement, the 1977 and subsequent model year labeling requirements are essentially identical to those in effect for the 1976 EPA/FEA Voluntary Fuel Economy Labeling Program. The label value calculation procedures are also the same as for the 1976 voluntary program. Interested parties, particularly manufacturers, are requested to comment on the effect that the new specific labeling provision will have on the use of specific labels by the industry.

The proposed regulations allow a manufacturer to use specific labels in place of general labels. However, except as noted below, the Agency will require that a general label be approved for each model type prior to the public introduction date of any vehicle configuration included in that model type. This provision has been included for two reasons: (1) EPA must calculate a general label value for each model type for inclusion in the fuel economy booklet, and (2) the availability of an approved general label value assures that the manufacturer can revert back to a general label in the event of a mid-year production change obsoletes some specific labels. However, EPA recognizes that large volume fleet sales often occur prior to the date at which the manufacturer might normally request a general label value be calculated, and that vehicles are often shipped to dealers before model introduction. Therefore, up until each manufacturer's general model introduction date, a manufacturer may introduce into commerce vehicles labeled with specific fuel economy labels *without* having an approved general label.

Every label will display an average annual fuel cost estimate based on the combined fuel economy that appears on that label. The EPA Administrator will, with assistance from the Secretary of Transportation and the Federal Energy Administrator, determine the proper values for the average annual mileage for a new car and the average cost of fuel, respectively, and will advise the affected manufacturers of these data.

Neither the fuel economy values nor the average annual fuel costs initially determined for a general label will be revised during the course of a model year. However, on specific fuel economy labels, both the fuel economy figures and the annual fuel cost estimate will be updated to reflect any mid-year production modification that affects the vehicle configuration fuel economy.

The Act specifies that fuel economy labels contain the range of fuel economy from comparable automobiles. EPA is proposing that for the purpose of this requirement, this range should be the range of the city/highway combined fuel economy values for all model types included within a class.

All vehicles within a car line (or truck line) will be grouped into a single class. One distinct range will be calculated for each class for use on both general and specific labels. The range will consist of the highest and lowest combined fuel economy results of all model types within the class, i.e., the range of the general label values within the class. Since the fuel economy booklet is the primary source of comparative vehicle fuel economy information and lists general label values, it is desirable that any secondary and subordinate source of information, such as the label range values, be consistent. Additionally, for those vehicles included in a published edition of the fuel economy booklet, a consumer will be able to compare the fuel economy values of other model types of the same class and other classes.

The Agency recognizes that regardless of the approach adopted for establishing the range of fuel economy values used on labels, there can be some degree of confusion for the potential car buyer. For example, if the range were to be based on specific label values, potential car buyers would have no practical way to ascertain which vehicles represent the extremes of the range since this information cannot readily be kept up-to-date and published in current booklet form. Conversely, if the range of values is based on general label values, vehicles that are specific-labeled could show fuel economy values outside of the range. EPA has tentatively concluded that less confusion will result from using the latter scheme, and will explain in the fuel economy booklet why some specific-labeled vehicles show fuel economy values outside of the range given on the label. Therefore, the range values are proposed to be based upon model type (i.e., general label) combined fuel economy figures for all automobiles determined to be in a specific class.

The Agency considered three basic issues relating to the range requirement:

1. How many classes should there be and what cut points should be employed?

2. Should the classes have descriptive names or be designated by a number or letter?

3. On what basis should car lines (and truck lines) be assigned to a class?

EPA concluded that a system that groups automobiles into a relatively small number of classes is most desirable. Too few classes have the effect of grouping too many dissimilar cars together and would not provide meaningful comparative information. On the other hand, a large number of classes is tantamount to putting each vehicle in its own unique class which frustrates the purpose of putting the range on the label.

Regarding the names of the classes, there are advantages to both approaches posed in question 2, above. The Agency sees merit in a scheme that uses descriptive terms that consumers generally understand. For example, passenger automobiles might be designated as "subcompact", "compact", "intermediate", "full-size", or "sports/specialty". For light trucks, common categories are "small pickup", "standard pickup", and "utility/special purpose". These classes are often used by trade publications, industry associations, and consumer testing organizations to identify vehicles. However, the disadvantage of using such names is that the class into which a vehicle is grouped for fuel economy labeling purposes may differ from the marketing intentions of the manufacturer. EPA wants to avoid any interference with manufacturer's marketing efforts. For this reason, EPA accepts that there may be some advantage to identifying the classes by using numbers or letters (e.g., "1", "2", or "A", "B").

Concerning the third issue, the basis for class determination, EPA could find no commonly accepted, objective criterion by which vehicles could be grouped into categories. Although the majority of existing classification systems are related to vehicle size, classification is ap-

parently determined subjectively based largely on the "marketing intent" of the manufacturer or, as may be perceived by some other classifying organization. It is not acceptable, in the Agency's opinion, to rely on subjective evaluations for class assignments. However, one disadvantage of an objective approach is that there will be a small number of vehicles that will appear to be misclassified. Comments are requested on a regulatory provision and the circumstances under which it would be applied to permit the Administrator to reclassify such vehicles on petition of a manufacturer.

EPA examined several parameters and dimensions in an effort to arrive at a solution that sensibly and objectively categorizes automobiles into classes. A primary consideration in evaluating any alternative approach is that the method be consistent with the proposed labeling scheme (i.e., general and specific) to the extent that no proliferation in the number of labels results. For example, a general label frequently includes automobiles in more than one weight class. Consequently, a method of defining classes of vehicles based on weight would necessitate that either more than one range appear on a single general label or that multiple versions of the same general label be used. Also, using weight as a criterion would provide little consumer information, because few people are believed to buy cars by weight.

In studying the automobile population, it became apparent to EPA that five basic types of vehicles existed: conventional passenger cars (generally designed to carry at least four persons and a moderate amount of luggage), station wagons (generally designed to carry at least 4 passengers and a large amount of luggage or property), sports passenger cars (normally designed to carry only two persons and a limited amount of luggage), exotic passenger cars (designed to carry anywhere from two to six persons, but costing significantly more than the average consumer normally considers on spending for an automobile) and light trucks (designed to carry primarily property). Size alone does not distinguish these fundamentally different types of vehicles. In addition, considering these basic types of vehicles together could distort the ranges. Therefore, EPA concluded that automobiles should first be subdivided into these five basic types and then classification schemes *within* each basic type evaluated.

EPA reasoned that since the number of sports and exotic passenger cars is relatively small, that both could be combined into a single class (e.g., "Sports/Specialty Automobiles"). Secondly, such a class would be comprised of all passenger automobiles with maximum seating capacity of two (as determined by the number of required seat belts) and all passenger automobiles with a base manufacturer's suggested retail price greater than some fixed dollar amount. Based on 1976 model year vehicles, a value of $15,000 or more appears to isolate those vehicles that are generally considered ultra-expensive or exotic from those that are more conventional. Clearly, this or any such price figure would have to be re-evaluated yearly.

For the purpose of subdividing trucks into classes, body shape and wheelbase length proved to be reasonable criteria. Trucks would then be divided into three classes, "Small Pickups" (trucks with open cargo bed and wheelbase under 112 inches), "Standard Pickups" (trucks with open cargo bed and wheelbase 112 inches or greater), and "Utility/Special Purpose" (all other light duty trucks). EPA attempted to develop a definition for vans as a separate class of trucks, but could not arrive at a satisfactory description of a van. Therefore, vans are included in the Utility/Special Purpose category.

An alternative approach for classifying pickup trucks into small and standard sizes which uses gross vehicle weight (GVW) as a determinant instead of wheelbase was recommended by FEA. Trucks with GVW less than 4500 pounds would be classed as small pickups under this approach, those with GVW equal to or greater than 4500 pounds would be classed as standard size pickups.

Conventional passenger cars are more difficult to classify since there are so many variations and they are continually changing from year to year. EPA and FEA analyzed several different methods for classifying passenger cars. EPA concluded that two of the alternatives had significantly more potential than the others.

The first approach is to group passenger cars (other than sports/specialty cars, into classes on the basis of wheelbase. EPA found that wheelbase generally separates cars into classes that are consistent with common groupings. Passenger cars were divided into four categories:

Subcompact (wheelbase length less than 100 inches)
Compact (wheelbase length 100 inches to less than 112 inches)
Intermediate (wheelbase length 112 inches to less than 120 inches)
Full Size or Large (wheelbase length 120 inches or greater)

Although the wheelbase approach appears to work well for all 1976 model year vehicles, EPA recognizes that automobiles may very well change in the near future, largely due to the need to reduce the size of cars for fuel economy reasons. Particularly among domestic manufacturers, large cars are getting smaller and lighter and new compacts and subcompacts are being added to product lines. The car which is of a size today that would be considered "full size" will, in the near future be reduced in size to the range of today's intermediates. Moreover, this change is taking place at different rates for different manufacturers. A manufacturer who reduces the size of his cars is therefore facing the prospect of having his "full size" car put into the intermediate class, where fuel economy is generally better, rather than remaining in the "full size" class and reaping the competitive advantage of having reduced size and improved fuel economy.

This situation exists to some extent for any system which uses a size-related characteristic as the basis for classification. Unfortunately, any objective procedure requires that limits be set to define each class, but since vehicles are undergoing changes, the system is, in a sense, aiming at a moving target—at best, the procedure may work for the 1977 model year but would likely have to be revised in the next couple of years. This disadvantage is accentuated in systems which rely on *exterior* dimensions as the criteria for classification more than it is of interior dimension systems, since manufacturers will likely be trying to reduce overall size while retaining interior space. Furthermore, any system which relies on measurement of only one vehicle characteristic will necessarily be overly sensitive to any changes in that facet of design while being insensitive to any other changes.

Therefore, recognizing the potential problems associated with a relatively simplistic aproach like the wheelbase system, EPA looked at a more sophisticated scheme that considers several design characteristics including exterior *and* interior vehicle dimensions and luggage capacity. This second method of classifying passenger cars is referred to as the "volume" scheme.

The advantages of the volume approach are that it is compatible with the space and weight conscious design of the new cars expected during the next few years and would tend to differentiate these cars from older designs which do not utilize space as efficiently. The manufacturer who reduces the size of his car and increases fuel economy, but who maximizes interior space, could be in the same class as larger (externally) cars and could thus have a favorable competitive fuel economy position. In terms of the objectives of EPCA, this procedure would seem to provide an additional incentive for manufacturers to improve fuel economy.

As considered by EPA, the volume approach classifies passenger cars on the basis of a class index, which is the sum of an interior volume index and a normalized exterior volume index. These indices are calculated using the basic measurement techniques found in the Society of Automotive Engineers (SAE) Recommended Practice J1100A, Motor Vehicle Dimensions. The actual measurement techniques are not described here in detail. A copy of this procedure has been placed in the Public Information Reference Unit, U.S. Environmental Protection Agency, Room 2922, 401 M Street, S.W., Washington, D.C. 20460.

The interior volume index for sedans is defined as:

Interior volume index = Front seat volume + rear seat volume + trunk volume

where

Front seat volume = Head room × shoulder room × leg room

and

Rear seat volume = Head room × shoulder room × leg room

For hatchback models, trunk volume is proposed to be measured with the rear seat up, not down, as in the SAE Practice.

Station wagon interior volumes are calculated using the same expression as for sedans, except that cargo volume is substituted for trunk volume.

All measurements are to be in feet. The exterior volume index is expressed as:

Exterior volume index=Overall vehicle length×overall vehicle width×overall vehicle height

In order to calculate the class index, the exterior volume index is "normalized" by multiplying it by a ratio of the average interior volume index divided by the average exterior volume index. Based upon 1976 vehicles, this ratio is approximately 0.25. The purpose of normalizing the exterior volume index is to make the class index equally sensitive to both interior and exterior volume changes. EPA requests specific comments on the appropriate weighting of interior and exterior volumes and on the various components of interior volume-front seat volume, back seat volume, and trunk volume.

Based on 1976 model year vehicles, EPA has categorized conventional passenger cars into five classes, with each class defined as:

Class 1—cars with class index less than 162 cubic feet
Class 2—cars with class index between 162 to less than 186 cubic feet
Class 3—cars with class index between 186 to less than 222 cubic feet
Class 4—cars with class index between 222 to less than 248 cubic feet
Class 5—cars with class index over 248 cubic feet

Station wagons can be classified by either the wheelbase or the volume approach. The same cutpoints that applied to conventional passenger cars could be used for station wagons under the wheelbase approach since the same chassis are used. However, under the volume approach the larger interior volumes of station wagons necessitate the use of separate cutpoints. The classes and cutpoints recommended by the FEA are:

Class 1—class index less than 200 cubic feet.
Class 2—class index: 200 to less than 220 cubic feet.
Class 3—class index: 220 to less than 280 cubic feet.
Class 4—class index: 280 to less than 330 cubic feet.
Class 5—class index greater than 330 cubic feet.

EPA has tested the volume scheme using a representative sample of current automobiles. However, due to the several dimensions that are required for each vehicle before a class index can be calculated, EPA has not applied the approach to all available makes of cars. Yet, based upon a limited number of vehicles, the volume system appears to assign vehicles to groups that correspond well with those classifications used by the media. EPA is continuing to evaluate other vehicles as additional data becomes available.

The Agency appreciates the significance of the method used to determine classes of comparable automobiles and recognizes that it has the potential effect of significantly affecting which vehicles compete with one another. However, EPA also realizes that the final determination of comparability rests with the consumer, who will evaluate and weigh the importance of various features differently according to individual needs, perception, etc. Nevertheless, the Agency is interested in arriving at a solution that is as meaningful to consumers as is possible and requests comments on the concept of classifying vehicles and the criteria that could be used to categorize vehicles. Specifically, EPA requests comments on the three key issues discussed earlier relating to this subject and on the acceptability of the wheelbase and volume schemes. Comments should address the appropriateness of the recommended approaches as they relate to current (1977 model year) vehicles and the potential impact that planned, near term (through 1980) model changes might have on the desirability of the discussed methods as well as any other alternative classification systems.

Because of the complexity of this topic and the limited information available to EPA concerning future model year vehicles, the Agency has decided not to publish specific regulatory language on comparability at this time. The Agency expects that responses received during the comment period, together with the discussed approaches, will serve as the basis in formulating a final position.

At the beginning of each model year, EPA will issue fuel economy ranges for each class of comparable vehicles as soon as enough data have been collected to calculate meaningful ranges. EPA will update these ranges during the model year if additional data on newly introduced model types make the original ranges unrepresentative. For the 1977 model year, EPA anticipates that the original issue date for the ranges will be approximately October 1, 1976, and that updated ranges will be issued approximately February 1, 1977. In each case, manufacturers will be required to include the most current range on labels affixed to automobiles manufactured or imported after 15 calendar days following receipt of the data. Automobiles manufactured or imported before the first range is available will be required to contain language on the label stating that no fuel economy range was available as of the date of production or importation. EPA requests comments on the appropriateness of this procedure, and on the specific time period involved.

III. *Booklet Availability.* Automobile dealers are required, beginning with the 1977 model year, to make available to prospective purchasers the booklet containing fuel economy and estimated fuel cost information. For each model year, EPA will provide the Federal Energy Administrator with a copy of the booklet with the first edition expected to be available about the end of September. EPA anticipates that a second edition will be prepared in February which will include all model types certified after the compilation of the first edition. FEA will reproduce the booklets and make copies available to automobile dealers and other interested parties. Other parties may also reproduce the booklet for purposes of satisfying these requirements. Therefore, printing specifications and a description of the ways in which copies may deviate from the FEA-printed booklets are also included in the regulations.

IV. *Fuel Economy Data Vehicles.* Fuel economy data vehicles are those vehicles, in addition to emission certification vehicles, which are tested primarily to measure fuel economy for the purpose of including the results in the booklet or for labeling.

Fuel economy data vehicles may either be required or may be optional depending on the situation. For example, in a case in which additional data are necessary to calculate the manufacturer's general label values, fuel economy data vehicles are required. On the other hand, a manufacturer may voluntarily submit data from additional vehicles for use in calculation of specific labels or to supplement the minimum data base required to calculate a general label fuel economy value.

The need for fuel economy data vehicles arises from the fact that not all base levels are represented by emission certification tests. For purposes of determining compliance with emission certification standards, manufacturers' product lines are divided into engine families. Relatively few test vehicles (usually three to five) are tested from each engine family. These emission data vehicles are selected on the basis that the configuration is either projected to be a high seller or one that would be expected to exhibit high emissions. The expected high emission vehicle is selected on the premise that if the worst car in the engine family can meet the standards, the rest will likely meet the standards. Hence a significant fraction of the vehicle configurations covered by a certificate of conformity may not have been tested for emissions or fuel economy.

Fuel economy data vehicles can have one of two origins: prototypes, such as used for emission certification, or production vehicles. Production vehicles, including those that might be a part of a manufacturer's emission audit program or a Selective Enforcement Audit (SEA) test order, must be qualified by such procedures as checking the calibration of key components to assure that the vehicles are capable of generating representative fuel economy values.

In addition, to ease the burden of submitting additional data, manufacturers are permitted to change components on a previously tested vehicle to represent other vehicle configurations. Otherwise identical fuel economy data vehicles may also be tested at different inertia weight and road load power settings in order to represent more than one vehicle configuration.

Fuel economy data vehicles are permitted to have accumulated up to 10,000

miles. Although the 1976 voluntary fuel economy program specified some minimum mileage (2,000 miles for non-catalyst vehicles and 4,000 miles for catalysts vehicles), the proposed regulations have dispensed with the minimum. It is generally accepted that the fuel economy of a vehicle improves with the first few thousand miles as friction decreases. However, some automobile engines may be manufactured in such a way that the initial break-in period is minimized by operating the engine on a dynamometer or some other technique. By the time the vehicle completes the production process, the fuel economy characteristics of the vehicle may be essentially representative of a stabilized automobile. Therefore, the Agency has concluded that the question of the minimum mileage at which a test vehicle is capable of producing representative fuel economy data is best left to the manufacturer especially since it would be to the manufacturer's disadvantage to test a vehicle prior to the time it is stabilized from a fuel economy standpoint.

As an additional criterion, all fuel economy data vehicles must meet applicable emission standards in order to be accepted. If a vehicle fails to meet standard, no penalty is imposed under the fuel economy program other than rejecting the vehicle for the purposes of fuel economy testing. By permitting this increased flexibility in selecting and testing fuel economy data vehicles, manufacturers are encouraged to submit additional vehicles, thus improving the accuracy of the booklet and label values and encouraging participation in specific labeling. However, if individual configurations or groups of fuel economy data vehicles experienced difficulty in meeting emission standards during fuel economy testing, the Administrator will carry out appropriate investigation to identify the specific emission-related problem(s), the extent of the problem(s), and the corrective action required. Such corrective action may include revocation of the certificate of conformity or recall for the vehicle configurations or class of vehicles involved as provided by section 206(b)(2) or section 207(c)(1), as applicable, of the Clean Air Act, 42 U.S.C. section 1857 et seq.

EPA requests comments on the criteria used to determine the acceptability of fuel economy data vehicles. The Agency is also soliciting information on the use of production vehicles, such as those involved in a SEA test order or a manufacturer's internal quality control program, as fuel economy data vehicles. Manufacturers are specifically requested to comment on the extent to which such vehicles would be used as fuel economy data vehicles.

The proposed regulations also include a provision by which a manufacturer can use analytical techniques to develop additional fuel economy data in lieu of testing actual vehicles. The techniques must be approved by EPA prior to use for generating data for fuel economy labeling. It is expected that the approval of analytical methods would be limited to those addressing quantifiable parameters such as axle ratio, inertia weight, and road load power setting.

Manufacturers and other interested parties may participate in this rulemaking by submitting comments (in quadruplicate) to the Administrator, Environmental Protection Agency, Attention: Office of Mobile Source Air Pollution Control (AW-455), 401 M Street, S.W., Washington, D.C. 20460. All relevant material received on or before June 21, 1976, will be considered.

A copy of all public comments will be available for inspection and copying at the U.S. Environmental Protection Agency, Public Information Reference Unit, Room 2922 (EPA Library), 401 M Street, S.W., Washington, D.C. 20460. As provided in 40 CFR Part 2, a reasonable fee may be charged for copying services.

Title and Statutory Authority. This notice of proposed rulemaking is issued under the authority of Title V of the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 1901 et seq., as amended by Title III of the Energy Policy and Conservation Act, Pub. L. 94-163, 89 Stat. 871.

Dated: May 14, 1976.

RUSSELL E. TRAIN,
Administrator.

It is proposed that 40 CFR Part 600 Table of Contents be amended by adding Subparts A, C, D, E, and G as set forth below. Subparts B and F are reserved.

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AUTHORITY: Title V of the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 1901 et. seq., as amended by Title III of the Energy Policy and Conservation Act, Pub. L. 94-163, 89 Stat. 871.

2. It is proposed that 40 CFR Part 600 be amended by adding Subparts A, C, D, E, and G as set forth below. Subparts B and F are reserved.

Subpart A—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—General Provisions

§ 600.001-77 General applicability.

The provisions of this subpart are applicable to 1977 and later model year automobiles. The requirements apply to all automobiles of the respective model year regardless of the date of production.

§ 600.002-77 Definitions.

(a) As used in this subpart all terms not defined herein shall have the meaning given them in the Act:

(1) "Act" means Part I of Title V of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901 et seq.).

(2) "Administrator" means the Administrator of the Environmental Pro-

tection Agency or his authorized representative.

(3) "Secretary" means the Secretary of Transportation or his authorized representative.

(4) "Automobile" means any 4-wheeled vehicle propelled by fuel which is manufactured primarily for use on public streets, roads, or highways (except any vehicle operated on a rail or rails) and which is rated at 6,000 lbs gross vehicle weight or less or is a type of vehicle which the Secretary determines is substantially used for the same purposes.

(5) "Passenger Automobile" means any automobile which the Secretary determines is manufactured primarily for use in the transportation of no more than 10 individuals.

(6) "Model Year" means the manufacturer's annual production period (as determined by the Administrator) which includes January 1 of such calendar year. If a manufacturer has no annual production period, the term "model year" means the calendar year.

(7) "Federal Emission Test Procedure" refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in Part 86 for the respective model year, which are used to derive city fuel economy data.

(8) "Federal Highway Fuel Economy Test Procedure" refers to the dynamometer driving schedule, dynamometer procedure, and sampling and analytical procedures described in Subpart G of this part and which are used to derive highway fuel economy data.

(9) "Fuel" means gasoline and diesel fuel.

(10) "Fuel Economy" means the average number of miles traveled by an automobile or group of automobiles per gallon of gasoline or diesel fuel consumed as computed in § 600.613–76 or § 600.-206–77.

(11) "City Fuel Economy" means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal Emission Test Procedure.

(12) "Highway Fuel Economy" means the fuel economy determined by operating a vehicle (or vehicles) over the driving schedule in the Federal Highway Fuel Economy Test Procedure.

(13) "Combined Fuel Economy" means the fuel economy value determined for a vehicle (or vehicles) by harmonically averaging the city and highway fuel economy values, weighted 0.55 and 0.45 respectively.

(14) "Average Fuel Economy" means the production-weighted combined fuel economy value of all passenger automobiles produced by a manufacturer in a single model year as computed in § 600.-508–78.

(15) "Certification Vehicle" means a vehicle which is selected under § 86.077–24(b) and used to determine compliance under § 86.077–30 for issuance of an original certificate of conformity.

(16) "Fuel Economy Data Vehicle" means a vehicle used for the purpose of determining fuel economy which is not a certification vehicle.

(17) "Label" means a sticker that contains fuel economy information and is affixed to new automobiles in accordance with Subpart D of this part.

(18) "Dealer" means a person who resides or is located in the United States, any territory of the United States or the District of Columbia and who is engaged in the sale or distribution of new automobiles to the ultimate purchaser.

(19) "Model Type" means a unique combination of car line, basic engine, and transmission class.

(20) "Car Line" means a name denoting a group of vehicles within a make or car division which has a degree of commonality in construction (e.g., body, chassis). Car line does not consider any level of decor or opulence and is not generally distinguished by characteristics as roof line, number of doors, seats or windows except for station wagons or light-duty trucks. Station wagons and light-duty trucks are considered to be different car lines than passenger cars.

(21) "Basic Engine" means a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), catalyst usage, and other engine and emission control system characteristics specified by the Administrator.

(22) "Transmission Class" means the basic type of transmission, e.g., manual, automatic or semi-automatic.

(23) "Base Level" means a unique combination of basic engine, inertia weight, and transmission class.

(24) "Vehicle Configuration" means a unique combination of basic engine, engine code, inertia weight, transmission configuraton, and axle ratio within a base level.

(25) "Engine Code" means a unique combination, within an engine-system combination (as defined in Part 86), of displacement, carburetor (or fuel injection) calibration, distributor calibration, choke calibration, auxiliary emission control devices and other engine and emission control system components specified by the Administrator.

(26) "Inertia Weight" means the inertia weight class into which a vehicle is grouped based on its loaded vehicle weight in accordance with the provisions of Part 86.

(27) "Transmission Configuration" means a unique combination, within a transmission class, of the number of forward gears and, if applicable, overdrive. The Administrator may further subdivide a transmission configuration (based on such criteria as gear ratios, torque converter multiplication ratio, stall speed, shift calibration, etc.) if he determines that significant fuel economy differences exist within that transmission configuration.

(28) "Axle Ratio" means the number of times the input shaft to the differential (or equivalent) turns for each turn of the drive wheels.

(29) "Auxiliary Emission Control Devices (AECD)" means an element of design as defined in Part 86.

(30) "Rounded" means a number shortened to the specified number of decimal places in accordance with the "Round Off Method" specified in ASTM E 29–67.

(31) "Calibration" means the set of specifications, including tolerances, unique to a particular design, version or application of a component or component assembly capable of functionally describing its operation over its working range.

§ 600.003–77 Abbreviations.

The abbreviations used in this subpart have the same meaning as those in 40 CFR Part 86, with the addition of the following :"MPG" means miles per gallon.

§ 600.004–77 Section numbering, construction.

The model year of initial applicability is indicated by the section number. The two digits following the hyphen designate the first model year for which a section is effective until superseded.

Example: Section 600.111–78 applies to the 1978 and subsequent model years until superseded. If a § 600.111–81 is promulgated it would take effect beginning with the 1981 model year; § 600.111–78 would apply to model years 1978 through 1980.

§ 600.005–77 Maintenance of records and right of entry.

The provisions of this section are applicable to all fuel economy data vehicles. Certification vehicles are required to meet the provisions of § 86.077–7.

(a) The manufacturer of any new motor vehicle subject to any of the standards or procedures prescribed in this part shall establish, maintain, and retain the following adequately organized and indexed records.

(1) *General records.* (i) Identification and description of all vehicles for which data are submitted to meet the requirements of this part.

(ii) A description of all procedures used to test each vehicle.

(iii) A copy of the information required to be submitted under § 600.006–77 fulfills the requirements of paragraph (a)(1)(i).

(2) *Individual records.* (i) A brief history of each vehicle for which data are submitted to meet the requirements of this part, in the form of a separate booklet or other document for each separate vehicle, in which must be recorded:

(A) The steps taken to ensure that the vehicle with respect to its engine, drivetrain, fuel system, emission control system components, exhaust aftertreatment device, vehicle weight, or any other device or component, as applicable, will be representative of production vehicles.

(B) A complete record of all emission tests performed under Part 86 and all fuel economy tests performed under Part 600 (except tests performed by EPA directly), including all individual work-

sheets and other documentation relating to each such test, or exact copies thereof, the date, time, purpose, and location of each test, the number of miles accumulated on the vehicle when the tests began and ended, and the names of supervisory personnel responsible for the conduct of the tests.

(C) A description of mileage accumulated since selection or build-up of such vehicles including the date and times of each mileage accumulation listing both the mileage accumulated and the name of each driver, or each operator of the automatic mileage accumulation device, if applicable. Additionally, a description of mileage accumulated prior to selection or build-up of such vehicle must be maintained in such detail as is available.

(D) If used, the record of any devices employed to record the speed or mileage, or both, of the test vehicle in relationship to time.

(E) A record and description of all maintenance and other servicing performed, within 2000 miles prior to fuel economy testing under this part, giving the date and time of the maintenance or service, the reason for it, the person authorizing it, and the names of supervisory personnel responsible for the conduct of the maintenance or service. A copy of the maintenance information required to be submitted under § 600.006–77 fulfills the requirements of paragraph (a) (2) (i) (E).

(F) A brief description of any significant events affecting the vehicle during any time in the period covered by the history not described in an entry under one of the previous hearings including such extraordinary events as vehicle accidents or driver speeding citations or warnings.

(3) The manufacturer shall retain all records required under this subpart for a period of five years after the end of the model year to which they relate. Records may be retained as hard copy or reduced to microfilm, punch cards, etc., depending on the record retention procedures of the manufacturer, provided that in every case all the information contained in hard copy shall be retained.

(b) (1) Any manufacturer who has supplied fuel economy data to meet the requirements of this part shall admit any EPA Enforcement Officer during operating hours upon presentation of credentials at any of the following:

(i) Any facility where any fuel economy tests from which data are submitted or any procedures or activities connected with these tests are performed.

(ii) Any facility where any new motor vehicle which is being, was, or is to be tested is present.

(iii) Any facility where any construction process used in the modification or build-up of a vehicle into a fuel economy data vehicle is taking place or has taken place.

(iv) Any facility where any record or other document relating to any of the above is located.

(2) Upon admission to any facility referred to in paragraph (b) (1) of this section, the manufacturer shall allow any EPA Enforcement Officer:

(i) To inspect and monitor any part or aspect of procedures activities, and testing facilities, including, but not limited to, monitoring vehicle preconditioning, emission tests and fuel economy tests and mileage accumulation, maintenance, and vehicle soak and storage procedures; and to verify correlation of calibration of test equipment;

(ii) To inspect and make copies of any required records, designs, or other documents; and

(iii) To inspect and photograph any part or aspect of any fuel economy vehicle and any components to be used in the construction thereof.

(3) Any EPA Enforcement Officer will be furnished, by those in charge of a facility being inspected, with such reasonable assistance as may be requested to help discharge any function listed in this paragraph (b). Each manufacturer is required to have those in charge of the facility furnish such reasonable assistance without charge to EPA whether or not the manufacturer controls the facility.

(4) The duty to admit any EPA Enforcement Officer shall be applicable whether or not the manufacturer owns or controls the facility in question and is applicable to both domestic and foreign manufacturers and facilities. An EPA Enforcement Officer will not attempt to make any inspections which the officer has been informed are in contravention of any law. However, if local law makes it impossible for the EPA Enforcement Officer to verify or to insure the accuracy of data generated at a facility such that no informed judgment can properly be made as to the accuracy or reliability of data generated by or obtained from the facility, then a vehicle or data from that vehicle shall not be accepted for use in Subparts C or F of this part (unless the Administrator is otherwise convinced of the accuracy and reliability of such data).

(5) For purposes of this paragraph (b):

(i) "Presentation of credentials" means display of the document designating a person as an EPA Enforcement Officer.

(ii) Where vehicle, component, or engine storage areas or facilities are concerned, "operating hours" shall means all times during which personnel other than custodial personnel are at work in the vicinity of the area or facility and have access to it.

(iii) For facilities or areas other than those covered by paragraph (b) (5) (ii) the term, "operating hours" will mean all times during which an assembly line is in operation or all times during which testing, maintenance, mileage accumulation, production or compilation of records, or any other procedure or activity related to fuel economy testing, or to vehicle manufacture or assembly is being carried out in a facility.

(iv) "Reasonable assistance" includes, but is not limited to, clerical, copying, interpretation and translation services, the making available of personnel of the facility being inspected during their working hours to inform the EPA Enforcement Officer of the operating procedures of the facility and to answer the EPA Enforcement Officer's questions; on request, and the performance on request of emissions tests or fuel economy tests on any vehicle which is being, has been, or will be used for fuel economy testing under this part. These tests shall be nondestructive, but may require appropriate mileage accumulation. By written request of the EPA Enforcement Officer, a manufacturer may be required to cause any employee of the manufacturer to appear before the EPA Enforcement Officer for the purpose of providing information pertaining to the records, books, papers and documents kept by the manufacturer and information pertaining to the manufacturer's monitoring, storage, maintenance, production and testing procedures and facilities, provided that the information will reasonably be required by the EPA Enforcement Officer to carry out the duties prescribed under this part. Any employee who has been instructed by the manufacturer to appear will be entitled to be accompanied, represented, and advised by counsel. No counsel who accompanies, represents, or advises an employee compelled to appear may accompany, represent, or advise any other person or entity directly or indirectly involved in the investigation.

(v) Any entry without 24 hours prior written or oral notification to the affected manufacturer shall be authorized in writing by the Assistant Administrator for Enforcement.

§ 600.006–77 Data to be submitted.

(a) All certification vehicles are considered to have met the requirements of this section.

(b) The manufacturer shall submit the following information for each fuel economy data vehicle:

(1) A description of the vehicle, exhaust emission test results, applicable deterioration factors, and adjusted exhaust emission levels.

(2) A statement of the origin of the vehicle including total mileage, mode of mileage accumulation, and modifications (if any) from the vehicle configuration in which the mileage was accumulated. (For modifications requiring advance approval by the Administrator, the name of the Administrator's representative approving the modification and date of approval are required.) If the vehicle was previously used for testing for compliance with Part 86 or previously accepted by the Administrator as a fuel economy data vehicle in a different configuration, the requirements of this subparagraph may be satisfied by reference to the vehicle number and previous configuration.

(3) A description of all maintenance to engine, emission control system or fuel system components performed within 2000 miles prior to fuel economy testing.

(4) A copy of calibrations for engine, fuel system, and emission control devices, showing the calibration of the actual components on the test vehicle as well as the design tolerances. (If calibrations for components were submitted previously as

part of the description of another vehicle or configuration, the original submittal may be referenced.)

(5) A statement that the fuel economy data vehicle, with respect to which data are submitted:

(i) Has been tested in accordance with applicable test procedures,

(ii) Is, to the best of the manufacturer's knowledge, representative of the vehicle configuration listed, and

(iii) Is in compliance with applicable exhaust emission standards according to § 86.077–28(a).

(c) The manufacturer shall submit the following fuel economy data for each fuel economy data vehicle.

(1) All individual test results and the harmonic average fuel economy of all city fuel economy tests and the harmonic average fuel economy of all highway fuel economy tests conducted by the manufacturer.

(2) For a vehicle other than a certification vehicle. As defined in this part tested by the Administrator under Part 86, the city and highway fuel economy results from the test or tests on that vehicle.

(d) The manufacturer shall submit an indication of the intended purpose of the data (e.g., data required by the general labeling program or voluntarily submitted for specific labeling).

(e) In lieu of submitting actual data from a test vehicle, a manufacturer may provide fuel economy values derived from an analytical expression, e.g., regression analysis. In order for fuel economy values derived from analytical methods to be accepted, the expression (form and coefficients) must be approved by the Administrator.

(f) If in conducting tests required or authorized by this part the manufacturer utilizes procedures, equipment, or facilities not described in the Application for Certification required in § 86.077–21, the manufacturer shall submit a description of such procedures, equipment, and facilities.

§ 600.007–77 Vehicle acceptability.

(a) All certification vehicles and other vehicles tested to meet the requirements of Part 86 (other than those chosen per § 86.077–24(c)) are considered to have met the requirements of this section.

(b) Any vehicle not meeting the provisions of paragraph (a) must be judged acceptable by the Administrator under this section in order for the test results to be reviewed for use in Subpart C or F of this part. The Administrator will judge the acceptability of a fuel economy data vehicle on the basis of the information supplied by the manufacturer under § 600.006–77(b). The criteria to be met are:

(1) A fuel economy data vehicle may have accumulated not more than 10,000 miles. This requirement will be considered to have been met if the base vehicle (i.e., chassis and basic engine) has accumulated 10,000 or fewer miles. Components other than engine, emission control system, and drivetrain are not required to be the same components installed when the mileage was accumulated. Engine, emission control system, and drivetrain components may be installed, replaced, or adjusted only with advance approval of the Administrator.

(2) A vehicle may be tested in different vehicle configurations by change of vehicle components, as specified in paragraph (b)(1), or by testing at different inertia weights or road load power settings. For the purpose of this part, each vehicle configuration will be considered a distinct vehicle and must be identified accordingly.

(3) The mileage on a fuel economy data vehicle must be, to the extent possible, accumulated according to § 86.077–26(a)(2).

(4) Each fuel economy data vehicle must meet the same exhaust emission standards as certification vehicles of the respective engine-system combination during the test in which the city fuel economy test results are generated. The deterioration factors established for the respective engine-system combination per § 86.077–28 will be used.

(5) No major engine tune-ups (as described in § 86.077–25) may be performed on a fuel economy data vehicle later than 2000 miles prior to the test, unless specifically authorized by the Administrator.

(6) The calibration information submitted under § 600.006–77(b) must be representative of the vehicle configuration for which the fuel economy data was submitted.

(c) If, based on a review of the information submitted under § 600.006–77(b), the Administrator determines that a fuel economy data vehicle meets the requirements of this section, the fuel economy data vehicle will be judged to be acceptable and the fuel economy data from that fuel economy data vehicle will be reviewed pursuant to § 600.008–77.

(d) If, based on the review of the information submitted under § 600.006–77(b), the Administrator determines that a fuel economy data vehicle does not meet the requirements of this section, the Administrator will reject that fuel economy data vehicle and inform the manufacturer of the rejection in writing.

(e) If, based on a review of the emissions data for a fuel economy data vehicle, submitted under § 600.006–77(b)(4), or emissions data generated by a vehicle tested under § 600.008–77(d), the Administrator determines that a significant indication of emission non-compliance exists, he may take such investigative actions as are appropriate to determine to what extent emission non-compliance actually exists.

(1) The Administrator may, under the provisions of § 86.077–37(a), request the manufacturer to submit production vehicles of the configuration(s) specified by the Administrator, for testing to determine to what extent emission non-compliance of a production vehicle configuration or of a group of production vehicle configurations actually exists.

(2) If the Administrator determines, as a result of his investigation, that substantial emission non-compliance is exhibited by a production vehicle configuration or group of production vehicle configurations, he may proceed with respect to the vehicle configuration(s) as provided under section 206(b)(2) or section 207(c)(1), as applicable, of the Clean Air Act, 42 U.S.C. section 1857 et. seq.

§ 600.008–77 Review of fuel economy data and testing by the administrator.

(a) Fuel economy data must be judged acceptable by the Administrator in order for the test results to be used in Subpart C or F of this part. The Administrator will evaluate the acceptability of the fuel economy data from either a fuel economy data vehicle or a certification vehicle on the basis of the test data submitted under § 600–006–77(c) or test data generated by the Administrator, as applicable, in accordance with good engineering practice.

(b) If, in the Administrator's judgment, the city and highway fuel economy results (or the harmonic averages, as applicable, if more than one test were conducted) for a fuel economy data vehicle, or for a certification vehicle, are reasonable and representative, the Administrator will accept the fuel economy data (or harmonic averages, as applicable, of the city and highway fuel economy data if more than one test were conducted) for use in Subpart C or F. In making this determination, the Administrator will, when possible, compare the results of a test vehicle to those of other similar test vehicles.

(c) If, in the Administrator's judgment, the city and highway fuel economy results (or the harmonic averages if more than one test were conducted) for a fuel economy data vehicle or for a certification vehicle are not reasonable or representative, the Administrator will notify the manufacturer in writing of his finding and require the manufacturer to submit the test vehicle(s) in question, at a place he may designate, for the purpose of fuel economy testing.

(d) The Administrator may require that any fuel economy data vehicle or certification vehicle be submitted, at a place he may designate, for the purpose of confirmation of fuel economy testing.

(e) For any fuel economy data vehicle that the Administrator has required to be supbmitted, at a place he may designate for the purpose of fuel economy testing, and for any certification vehicle, the Administrator will follow this procedure:

(1) The manufacturer's data (or harmonically averaged data if more than one test were conducted) will be compared with the results of the Administrator's test.

(2) If, in the Administrator's judgment, the comparison in (1) indicates a disparity in the data, the Administrator will repeat the city test or the highway test or both as applicable.

(f) The manufacturer's average test results and the results of the Administrator's first test will be compared with the results of the Administrator's second test as in (1).

(ii) If, in the Administrator's judgment, both comparisons in (2)(i) indicate a disparity in the data, the Administrator will repeat the city fuel economy test or highway fuel economy test or both as applicable until

(A) In the Administrator's judgment no disparity in the data is indicated by comparison of two tests by the Administrator or by comparison of the manufacturer's average test results and a test by the Administrator, or

(B) Four city tests or four highway tests or both, as applicable, are conducted by the Administrator in which a disparity in the data is indicated when compared as in (2).

(3) If there is, in the Administrator's judgment, no disparity indicated by comparison of manufacturer's average test results with a test by the Administrator, the test values generated by the Administrator will be used to represent the vehicle.

(4) If there is, in the Administrator's judgment, no disparity indicated by comparison of two tests by the Administrator, the harmonic averages of the city and highway fuel economy results from those tests will be used to represent the vehicle.

(5) If the situation in subparagraph (2)(ii)(B) occurs, the Administrator will notify the manufacturer, in writing, that the Administrator rejects that fuel economy data vehicle.

(f) The fuel economy data determined by the Administrator under paragraph (e) (3) or (4), together with all other fuel economy data submitted for that vehicle under § 600.066–77(c) will be evaluated for reasonableness and representatives per paragraph (b). The fuel economy data which are determined to best meet the criteria of paragraph (b) will be accepted for use in Subpart C or F.

(g) If, based on a review of the fuel economy data generated by testing under (e), the Administrator determines that an unacceptable level of correlation exists between fuel economy data generated by a manufacturer and fuel economy data generated by the Administrator, he may reject all fuel economy data submitted by the manufacturer until the cause of the discrepancy is determined and the validity of the data is established by the manufacturer.

§ 600.009–77 Hearings on acceptance of test data and classification of automobiles.

(a) If the Administrator rejects the use of a manufacturer's fuel economy data vehicle, in accordance with § 600.008–77 (e) or (g), or the use of fuel economy data, in accordance with § 600.008–77 (c), or (f), or with the determination of a vehicle configuration, in accordance with § 600.206–77(a), or with the identification of a car line, in accordance with § 600.207–77(d), or with the fuel economy label values approved by the Administrator under § 600.213–77 (a), the manufacturer may, within 30 days following receipt of such notification, request a hearing on the Administrator's decision. The request may be in writing, signed by an authorized representative of the manufacturer and include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objections. If, after the review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, the manufacturer shall have a hearing in accordance with the provisions of this section with respect to such issue.

(b) (1) After granting a request for a hearing under paragraph (a) the Administrator will designate a Presiding Officer for the hearing.

(2) The General Counsel shall represent the Environmental Protection Agency in any hearing under this section.

(3) If a time and place for the hearing has not been fixed by the Administrator under paragraph (a) the hearing shall be held as soon as practicable at a time and place fixed by the Administrator or by the Presiding Officer.

(c) (1) Upon his appointment pursuant to paragraph (a) of this section, the Presiding Officer shall establish a hearing file. The file consists of the notice issued by the Administrator under paragraph (a) together with any accompanying material, the request for a hearing and the supporting data submitted therewith and correspondence and other data material to the hearing.

(2) The hearing file will be available for inspection by the applicant at the office of the Presiding Officer.

(d) A manufacturer may appear in person, or may be represented by counsel or by any other duly authorized representative.

(e) (1) The Presiding Officer upon the request of any party, or in his discretion, may arrange for a prehearing conference at a time and place specified by the Presiding Officer to consider the following:

(i) Simplification and clarification of the issues;

(ii) Stipulations, admissions of fact, and the introduction of documents;

(iii) Limitation of the number of expert witnesses;

(iv) Possibility of agreement disposing of all or any of the issues in dispute;

(c) Such other matters as may aid in the disposition of the hearing, including such additional tests as may be agreed upon by the parties.

(2) The results of the conference shall be reduced to writing by the Presiding Officer and made part of the record.

(f) (1) Hearings shall be conducted by the Presiding Officer in an informal but orderly and expeditious manner. The parties may offer oral or written evidence, subject to the exclusion by the Presiding Officer of irrelevant, immaterial and repetitious evidence.

(2) Witnesses will not be required to testify under oath. However, the Presiding Officer shall call to the attention of witnesses that their statements may be subject to the provision of title 19 U.S.C. 1001 which imposes penalties for knowingly making false statements or representations, or using false documents in any matter within the jurisdiction of any department or agency of the United States.

(3) Any witnesses may be examined or cross-examined by the Presiding Officer, the parties, or their representatives.

(4) Hearings shall be reported verbatim. Copies of transcripts of proceedings may be purchased by the applicant from the reporter.

(5) All written statements, charts, tabulations, and similar data offered in evidence at the hearing shall, upon a showing satisfactory to the Presiding Officer of their authority, relevancy, and materiality, be received in evidence and shall constitute a part of the record.

(6) Oral argument may be permitted in the discretion of the Presiding Officer and will be reported as part of the record unless otherwise ordered.

(g) (1) The Presiding Officer will make an initial decision which shall include written findings and conclusions and the reasons or basis therefor on all material issues of fact, law or discretion presented on the record. The findings, conclusions, and written decision shall be provided to the parties and made a part of the record. The initial decision shall become the decision of the Administrator without further proceedings unless there is an appeal to the Administrator or motion for review by the Administrator within 20 days of the date the initial decision was filed.

(2) On appeal from or review of the initial decision the Administrator shall have all the powers which he would have in making the initial decision including the discretion to require or allow briefs, oral argument, the taking of additional evidence or the remanding to the Presiding Officer for additional proceedings. The decision by the Administrator shall include written findings and conclusions and the reasons or basis therefor on all the material issues of fact, law or discretion presented on the appeal or considered in the review.

Subpart B—[Reserved]

Subpart C—Fuel Econor Regulations for 1977 and Later Model Year Automobiles—Procedures for Calculating Fuel Economy Values and Annual Fuel Cost Estimates

§ 600.201–77 General applicability.

The provisions of this subpart are applicable to 1977 and later model year automobiles.

§ 600.202–77 Definitions.

The definitions in § 600.002–77 apply to this subpart.

§ 600.203–77 Abbreviations.

The abbreviations in § 600.003–77 apply to this subpart.

§ 600.204–77 Section numbering, construction.

The section numbering system set forth in § 600.004–77 applies to this subpart.

§ 600.205–77 Record keeping.

The record keeping requirements set forth in § 600.005–77 apply to this subpart.

§ 600.206–77 Calculation and use of fuel economy values for a vehicle configuration.

(a) Fuel economy values determined for each vehicle and as approved in § 600.008–77 (b) or (f) are used to determine city, highway, and combined fuel economy values for each vehicle configuration (as determined by the Administrator) for which data are available.

(1) If only one city fuel economy and one highway fuel economy value exist for a vehicle configuration, those values, rounded to the nearest tenth of a mile per gallon, comprise the city fuel economy value and highway fuel economy value for that configuration.

(2) If more than one city fuel economy value and one highway fuel economy value exist for a vehicle configuration, all values for that vehicle configuration are harmonically averaged and rounded to the nearest tenth of a mile per gallon for the city fuel economy values, and harmonically averaged and rounded to the nearest tenth of a mile per gallon for the highway fuel economy values, in order to determine a city and a highway fuel economy value for that configuration.

(3) The combined fuel economy value for a vehicle configuration is calculated by harmonically averaging the city and highway fuel economy values, as determined in § 600.206–77(a) (1) and (2), weighted 0.55 and 0.45, respectively, and rounding to a tenth of mile per gallon. A sample of this calculation appears in Appendix II.

(b) The city, highway, and combined fuel economy values determined for the vehicle configuration according to paragraph (a) and rounded to the nearest whole mile per gallon comprise the fuel economy values that appear on specific labels as described in § 600.309–77.

(c) The annual fuel cost estimate for operating an automobile included in a vehicle configuration will be computed by the Administrator by using values for the fuel cost per gallon and average annual mileage and the combined fuel economy determined in (a) (3).

(1) The annual fuel cost estimate for a vehicle configuration is computed by multiplying

(i) Fuel cost per gallon (as obtained by the Administrator from the FEA Administrator), expressed in dollars to the nearest 0.01 dollar, by

(ii) Average annual mileage (as obtained by the Administrator from the Secretary), expressed in miles per year to the nearest mile per year, by

(iii) The inverse of: the combined fuel economy value for a vehicle configuration, expressed in miles per gallon to the nearest 0.1 mile per gallon.

(2) The product computed in (c) (1) and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on specific labels for that vehicle configuration.

§ 600.207–77 Calculation and use of fuel economy values for a model type.

(a) Fuel economy values for a base level are calculated from vehicle configuration fuel economy values as determined in § 600.206–77(a) for low altitude tests.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate full economy values for each base level for vehicles intended for sale in California and for each base level for vehicles intended for sale in the rest of the states.

(2) The manufacturer shall supply model year sales projections for each vehicle configuration within each car line to the Administrator.

(i) Sales projections must be supplied separately for each vehicle configuration intended for sale in California and each configuration intended for sale in the rest of the states if required by the Administrator under paragraph (a) (1).

(ii) The sales projections must be updated as of the date a manufacturer requests that fuel economy calculations for a model type be made by the Administrator.

(iii) The requirements of this section may be satisfied by providing an amended application for certification, as described in § 86.007–21.

(3) Vehicle configuration fuel economy values, as determined in § 600.207–77(a), are grouped according to base level, as defined in § 600.002–77(b) (23).

(i) If only one vehicle configuration within a base level has been tested, the fuel economy value from that vehicle configuration constitutes the fuel economy for that base level.

(ii) If more than one vehicle configuration within a base level have been tested, the vehicle configuration fuel economy values are harmonically averaged in proportion to the respective projected sales percent (rounded to the nearest 0.01 percent) of each vehicle configuration and the resultant fuel economy value rounded to the nearest tenth of a mile per gallon.

(iii) If the Administrator has not accepted test data for at least one vehicle configuration within each base level, the manufacturer shall submit (on or before the date the manufacturer requests the Administrator to calculate the respective general label values), data as specified for approval in § 600.006–77. The fuel economy data submitted shall be for the vehicle configuration with the largest projected sales within the respective base level.

(4) The procedure specified in § 600.207–77(a) will be repeated for each base level, thus establishing city, highway, and combined fuel economy values for each base level.

(b) For each model type, as determined by the Administrator, a city, highway, and combined fuel economy value will be calculated by using the projected sales and fuel economy values for each base level within the model type.

(1) If the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will calculate fuel economy values for each model type separately for vehicles intended for sale in California and for those intended for sale in the rest of the states.

(2) The sales fraction for each base level is calculated by dividing the projected sales of the base level within the model type by the projected sales of the model type and rounding the quotient to the nearest 0.01 percent.

(3) The city fuel economy values for the model type are determined by dividing one by a sum of terms, each of which corresponds to a base level and which is a fraction determined by dividing

(i) The sales fraction of the base level, by

(ii) The city fuel economy value for the respective base level.

(4) The procedure specified in subparagraph (3) is repeated in an analogous manner to determine the highway and combined fuel economy values for the model type.

(c) The city, highway, and combined fuel economy values as calculated in § 600.207–77(b) and rounded to the nearest whole mile per gallon are the fuel economy values used on general labels for that model type.

(d) The annual fuel cost estimate for operating an automobile included in a model type will be computed by the Administrator by using values for the fuel cost per gallon and average annual mileage, predetermined by the Administrator, and the combined fuel economy determined in (b).

(1) The annual fuel cost estimate for a model type is computed by multiplying

(i) Fuel cost per gallon expressed in dollars to the nearest 0.01 dollar, by

(ii) Average annual mileage, expressed in miles per year to the nearest mile per year, by

(iii) The inverse of the combined fuel economy value for a model type, expressed in miles per gallon to the nearest 0.01 mile per gallon.

(2) The product computed in (d) (1) and rounded to the nearest dollar per year will comprise the annual fuel cost estimate that appears on general labels for that model type.

§ 600.208–77 Sample calculation.

An example of the calculation required in this subpart appears in Appendix III to this Part 600.

Subpart D—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Labeling

§ 600.301–77 General applicability.

The provisions of this subpart are applicable to 1977 and later model year automobiles.

§ 600.302–77 Definitions.

The definitions in § 600.002–77 apply to this subpart.

§ 600.303–77 Abbreviations.

The abbreviations in § 600.003–77 apply to this subpart.

§ 600.304–77 Section numbering, construction.

The section numbering procedure set forth in § 600.004–77 applies to this subpart.

§ 600.305–77 Record keeping.

The record keeping requirements set forth in § 600.005–77 apply to this subpart.

§ 600.306–77 Labeling requirements.

(a) Each manufacturer shall affix or cause to be affixed and each dealer shall maintain or cause to be maintained on each automobile a general or specific fuel economy label, approved by the Administrator, that includes fuel economy information, annual fuel cost estimate, and the range of fuel economy of comparable automobiles.

(1) Each manufacturer shall affix or cause to be affixed a general label as described in § 600.308–77.

(2) At the option of the manufacturer, the requirements of this paragraph may be satisfied by labeling an automobile with a specific label, as described in § 600.309–77 in place of the general label. If the manufacturer elects to use a specific label within a model type (as defined in § 600.001(a)(19)), he shall have approved specific labels affixed concomitantly on all automobiles within this model type, except as permitted under § 600.310–77.

(b) The fuel economy label must be readily visible from the exterior of the automobile and remain affixed until the time the automobile is delivered to the actual custody and possession of the ultimate purchaser.

(1) The fuel economy label must be located on the rear-most window of the driver's side of the vehicle. If the rear-most window on the driver's side is not large enough to contain both the Automobile Information Disclosure Act label and the fuel economy label, the manufacturer shall have the fuel economy label affixed on the rear-most window of the passenger's side of the vehicle.

(2) The fuel economy label information may be included with the Automobile Information Disclosure Act label if the prominence and legibility of the fuel economy label is maintained. For this purpose, all fuel economy label information must be placed on a separate section of the label and may not be included as part of the Automobile Information Disclosure Act label information.

(3) The manufacturer shall have the fuel economy label affixed in a manner so that appearance and legibility are maintained until after the vehicle is delivered to the ultimate purchaser.

§ 600.307–77 Format of labels.

The fuel economy label must:

(a) Be rectangular in shape and large enough to allow inclusion of all required information;

(b) Be printed in a color which contrasts with the paper color and in a type size that is easily readable;

(c) Contain a reproduction of the EPA and FEA logo;

(d) Contain a statement that the vehicle fuel economy estimates included are based on the results of tests conducted or certified by the U.S. Environmental Protection Agency;

(e) Describe the labeled vehicle to the exact detail as specified in § 600.308–77 or § 600.309–77, as applicable;

(f) Contain that vehicle's fuel economy estimates as calculated in § 600.206–77 or § 600.207–77, as applicable, and as approved by the Administrator, to represent a city fuel economy, a highway fuel economy, and a combined fuel economy value;

(g) Contain a range of fuel economy estimates and class identification for similar vehicles whether or not manufactured by that vehicle's manufacturer except as provided in § 600.315–77(b)(1). This range is determined according to § 600.311–77 and supplied to the manufacturer by the Administrator;

(h) Contain the estimated annual fuel cost for the operation of that vehicle based on calculations described in § 600.206–77 or § 600.207–77, as applicable;

(i) State that these fuel economy estimates and the estimated annual fuel cost are based on tests of vehicles equipped with frequently purchased optional equipment;

(j) State that the actual fuel economy of this vehicle will vary depending on the type of driving the customer does, the customer's driving habits, vehicle maintenance, optional equipment installed and used, and road and weather conditions; and

(k) State that for the purposes of comparing fuel economies of vehicles of that model year and to learn how the tests were conducted, the booklet described in Subpart E for that model year is available free upon request from the dealer.

Sample fuel economy label formats and language that would be approved are included in Appendix IV.

§ 600.308–77 General label contents.

The general fuel economy label must contain the following:

(a) The information and statements as described in § 600.307–77 (a) through (k).

(b) A description of the applicable vehicle specifying:

(1) Vehicle car line,

(2) Number of engine cylinders,

(3) Engine displacement, in cubic inches, cubic centimeters, or liters, whichever is consistent with the customary description of that engine,

(4) Fuel metering system, including number of carburetor barrels, if applicable,

(5) Transmission class,

(6) Catalyst usage, if so equipped,

(7) Other engine or vehicle parameters, if approved by the Administrator, and

(8) California emission control system usage, if the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states.

(c) General label fuel economy values and estimated fuel cost as calculated according to § 600.207–77.

(d) The estimated range of fuel economy of comparable automobiles and effective date except as provided in § 600.315–77(b)(1). This range is determined by the Administrator according to § 600.311–77 for each class of vehicles as described in § 600.316–77.

§ 600.309–77 Specific label contents.

The specific fuel economy label must contain the following:

(a) The information and statements as described in § 600.307–77 (a) through (k);

(b) A statement that the fuel economy estimates are from tests of this specific vehicle configuration and might not be in the booklet described in Subpart E;

(c) A description of the applicable vehicle specifying:

(1) Car line,

(2) Engine displacement,

(3) Number of cylinders,

(4) Transmission class and number of forward speeds,

(5) Fuel metering system, including number of carburetor barrels, if applicable,

(6) Catalyst usage, if so equipped,

(7) Other engine or vehicle parameters, if approved by the Administrator,

(8) Test (inertia) weight,

(9) Axle ratio, and

(10) California emission control system usage, if the Administrator determines that automobiles intended for sale in the State of California are likely to exhibit significant differences in fuel economy from those intended for sale in other states.

(d) Specific label fuel economy values and estimated fuel cost for that vehicle as determined according to § 600.206–77.

(e) The estimated range of fuel economy of comparable automobiles and effective date of the range except as provided in § 600.315–77(b)(1). This range is determined by the Administrator according to § 600.311–77 for each class of vehicles as described in § 600.316–77.

§ 600.310–77 Labeling of high altitude vehicles.

(a) The Administrator may approve, at the request of the manufacturer, specific labels for high altitude vehicles according to § 600.309–77.

(b) A high altitude vehicle may be labeled with an approved general or specific label by a manufacturer without regard to type of label, general or specific, used at low altitude for that model type of vehicle configuration.

§ 600.311–77 Range of fuel economy for comparable automobiles.

(a) The Administrator will determine the range of fuel economy values for each class of comparable automobiles.

(1) The range of fuel economy values within a class is computed from the maximum combined fuel economy value and minimum combined fuel economy value for all general label combined fuel economy values within the class, as determined in § 600.207–77(b) regardless of manufacturer.

(2) If the Administrator determines that automobiles intended for sale in California are likely to exhibit significant differences in fuel economy from those intended for sale in other states, he will compute separate ranges of fuel economy values for each class of automobiles for California and for the other states.

(3) For high altitude vehicles determined under § 600.310–77, both general and specific labels will contain the range of comparable fuel economy computed in § 600.311–77(a).

(4) The range of comparable fuel economy values for a class of automobiles is derived from the latest available data approved by the Administrator for that class of automobiles.

(b) The manufacturer shall include the range of fuel economy determined by the Administrator in (a) on each label affixed to an automobile within that class except as provided in § 600.315–77.

§ 600.312–77 Approval of labels.

All fuel economy values, fuel cost estimates, label formats, and other information pertaining to the fuel economy label must be approved by the Administrator before a label is affixed to the vehicle.

(a) If the manufacturer intends to use specific labels, both a specific label format and a general label format must be approved prior to use of the specific label. The manufacturer shall submit for approval by the Administrator each typical label format exemplifying the intended representation of all information required on the fuel economy label as well as the size or color of print, and paper, and spacing and location of all printed information. After approval by the Administrator, the manufacturer may not change the label except as required for proper vehicle description, fuel economy values, and estimated annual fuel costs. Where the fuel economy label is incorporated with the Automobile Information Disclosure Act label, the above requirements pertain to that section of the label reserved for fuel economy labeling.

(b) All vehicle description, fuel economy values and annual fuel cost estimates intended for use on general and specific labels must be approved in advance by the Administrator. Fuel economy values are computed according to Subpart C from approved vehicle fuel economy results as determined under § 600.008–77.

§ 600.313–77 Timetable for data and information submittal and review.

(a) The Administrator will notify the manufacturer of the classification of each of the manufacturer's car lines after the manufacturer makes a request for such determination.

(b) Each fuel economy label format which the manufacturer intends to use must be approved by the Administrator before the manufacturer requests the Administrator to determine fuel economy values for use on that type of label. For example, a California general label format must be approved by the Administrator before the manufacturer requests California general label fuel economy values.

(c) If a manufacturer requests and submits sufficient information, the Administrator will determine, according to Subpart C, general label or specific label fuel economy values based upon information submitted by the manufacturer.

(1) As of the public introduction date of a vehicle configuration included in a model type, a manufacturer must have requested general label fuel economy values for that model type and submitted sufficient information to determine these general label fuel economy values.

(2) As of the date of the request, the manufacturer may not submit additional information pertaining to this request except as required by the Administrator.

(3) After receipt of a manufacturer's request for computation of label values, the Administrator will review according to § 600.008–77 the fuel economy submission received from the manufacturer, and notify the manufacturer of approval or request further data, information, or vehicles in accordance with the approval procedure specified in Subpart A.

(4) After receipt of a manufacturer's data, information, or vehicles in response to subparagraph (3), the Administrator will conduct any testing and complete data review required under subparagraph (3), and notify the manufacturer of the results of this testing and review.

(5) After completion of any testing or review of the data which satisfy the requirements of subparagraph (3), the Administrator will provide the manufacturer with general label and/or specific label (as requested under this paragraph) fuel economy values, annual fuel cost estimates, and a range of fuel economy of comparable automobiles (when a range is available) as calculated from approved data. After receipt of approved fuel economy label values, the manufacturer may use these data in the labeling of his automobiles.

(6) The manufacturer should submit any request for data under this section at least 25 working days before he desires the Administrator's response. This should allow the Administrator sufficient time to conduct any additional testing required.

§ 600.314–77 Updating fuel economy, annual fuel cost, and range of fuel economy for comparable automobiles.

(a) After the Administrator approves general label fuel economy values for a model type, those values will remain in effect for that model type for the remainder of the model year.

(b) After the Administrator approves specific label fuel economy values for a vehicle configuration, those values will remain in effect for that vehicle configuration for the remainder of the model year.

(c) Estimated annual fuel cost as determined in § 600.206–77 for specific labeled automobiles and in § 600.207–77 for general labeled automobiles incorporates factors for average annual miles driven and cost per gallon of fuel.

(1) These factors are determined by the Administrator before the model year begins.

(2) These factors do not change during the model year.

(d) The Administrator will compute the range of fuel economy of comparable automobiles from the latest approved fuel economy values available at the time of label approval. Additionally, the Administrator will update the range of fuel economy of comparable automobiles for previously approved labels.

(1) The Administrator will make available an updated range of fuel economy of comparable automobiles for all approved general and specific labels in each class. The range will be made available on a date that coincides as closely as possible with the date of the general model year introduction. The Administrator will determine the general model year introduction date from the intended introduction dates reported by the various manufacturers.

(2) The Administrator will make available an updated range of fuel economy of comparable automobiles for all approved general and specific labels at any other appropriate date during the model year.

(3) The Administrator will communicate to the affected parties the dates referred to in subparagraphs (1) and (2).

§ 600.315–77 Implementation of vehicle labeling.

(a) Prior to being offered for sale each manufacturer shall cause to be affixed, and each dealer shall cause to be maintained the fuel economy information label.

(b) The manufacturer shall include the updated range of fuel economy of comparable automobiles (as described in § 600.314–77(d)) in the label of each vehicle manufactured or imported more than fifteen calendar days after the updated range is made available by the Administrator.

(1) Automobiles manufactured or imported before sixteen calendar days after the updated label range is made available under § 600.314–77(d)(1) will be labeled without a range of fuel economy

of comparable automobiles. In place of the range of fuel economy of comparable automobiles, the label will contain a statement indicating that as of the date of production or importation of this automobile, no range of fuel economy of comparable automobiles is available.

(2) Automobiles manufactured or imported more than fifteen calendar days after the updated label range is made available under § 600.314–77(d) (1) or (2) will be labeled with the latest available range of fuel economy of comparable automobiles as approved for that general or specific label.

(c) In place of general fuel economy labels, a manufacturer may, at his option, use approved specific fuel economy labels provided specific labels are used on all vehicles within a given model type as of a manufacture or importation date. The manufacturer shall, within three calendar days, initiate or discontinue as applicable, the use of specific labels on all vehicles within a model type at all manufacturing facilities or importation facilities, or both.

§ 600.316–77 Classes of comparable vehicles.

This section is reserved for the procedures used to group individual automobiles into classes for purposes of determining a fuel economy range. The procedures will be based on comments received in response to this Notice of Proposed Rulemaking.

Subpart E—Fuel Economy Regulations for 1977 and Later Model Year Automobiles—Dealer Availability of Fuel Economy Information

§ 600.401–77 General applicability.

The provisions of this subpart are applicable to 1977 and later model year automobiles.

§ 600.402–77 Definitions.

The definitions in § 600.002–77 apply to this subpart.

§ 600.403–77 Abbreviations.

The abbreviations in § 600.003–77 apply to this subpart.

§ 600.404–77 Section numbering, construction.

The section numbering procedure specified in § 600.004–77 applies to this subpart.

§ 600.405–77 Dealer requirements.

(a) Each dealer shall provide for examination by each prospective purchaser at each location where new automobiles are offered for sale a booklet containing the information specified in § 600.408–77. The dealer shall provide the booklet without charge and in sufficient quantity to be available for retention by each prospective purchaser upon his request.

(b) The dealer shall display the booklets in the same manner and in each location used to display brochures describing the automobiles offered for sale by the dealer. If no brochures describing the automobiles offered for sale by the dealer are displayed, the dealer shall prominently display the booklet. The display shall include information that booklets are also available through the mail by writing to Fuel Economy, Pueblo, Colorado 81009.

(c) The dealer shall display the booklet applicable to each model year automobile offered for sale at the location. If, as described in § 600.407–77, a regional edition of the booklet is prepared for California automobiles:

(1) Each dealer offering for sale at a location within the State of California shall display the California regional edition of the booklet.

(2) Each dealer who offers automobiles for sale at locations outside the State of California, and expects that at least 50 percent of the automobiles eventually sold at the location during the model year will be California configurations, shall display the California regional edition of the booklet. These dealers may also display the national edition of the booklet provided both editions are displayed with equal prominence.

§ 600.406–77 Distribution of booklet information.

(a) Each dealer will be provided with a sufficient quantity of booklets to fulfill his obligations under § 600.405–77(a) by:

(1) The U.S. Federal Energy Administration.

(2) Any other source.

(b) If the Administrator determines that automobiles intended for sale in the state of California are likely to exhibit significant differences in fuel economy from those offered for sale in other states, he will prepare a California edition of the booklet, and the Federal Energy Administration will distribute the California edition of the booklet as provided in this part.

§ 600.407–77 Booklets displayed by dealers.

(a) Booklets displayed by dealers, in order to fulfill the obligations of § 600.405–77, if not the booklets published by the FEA Administrator, must conform to the requirements in (b) through (j) inclusive, of this section.

(b) The booklet must contain the same contents, format, and order as the booklet published by the FEA Administrator.

(c) For each model type, the city, highway, and combined fuel economy values must be in the same size type and the combined fuel economy values must be in boldface type.

(d) Each fuel economy value must be in eight point type or larger.

(e) Each manufacturer or division name must be in bold type capitals in ten point type or larger.

(f) Each column heading must be in bold type capitals. The minimum size for column headings is six point type.

(g) The text of the booklet must be in eight point type except that:

(1) Titles and paragraph headings must be in boldface, may be capitalized, and must be of the same size type or larger type than the text.

(2) Each section in the text which appears in boldface type in the booklets published by the FEA Administrator must be printed in boldface type of the same size or larger than the type used in the text.

(h) The booklet must be printed or reproduced on 60 lb. or heavier stock paper.

(i) The booklet must be printed or reproduced on pages four by nine inches or larger.

(j) The booklet cover must be of the same general design and proportions as the cover on the booklets published by the FEA Administrator.

(k) A manufacturer's name and logo or a dealer's name and address or both may appear on the back cover of the booklet.

Subpart F—[Reserved]

Subpart G—Fuel Economy Regulations for 1977 Model Year Automobiles—Test Procedures

§ 600.601–77 General applicability.

The provisions of this subpart are applicable to 1977 model year automobiles.

§ 600.602–77 Definitions.

The definitions in § 600.002–77 apply to this subpart.

§ 600.603–77 Abbreviations.

The abbreviations in § 600.003–77 apply to this subpart.

§ 600.604–77 Section numbering; construction.

The model year of initial applicability is indicated by the section number. The two digits following the hyphen designate the model year for which a section is effective.

§ 600.605–77 Recordkeeping.

The recordkeeping requirements set forth in § 600.005–77 apply to this subpart.

§ 600.606–77 Equipment requirements.

The requirements for test equipment to be used for all fuel economy testing are given in §§ 86.177–16 and 86.177–17, as applicable.

§ 600.607–77 Fuel specifications.

(a) The test fuel specifications for gasoline-fueled automobiles are given in § 86.177–6(a)(1).

(b) The test fuel specifications for diesel automobiles are given in § 86.177–6(b) (1) and (2).

§ 600.608–77 Analytical gases.

The analytical gases for all fuel economy testing must meet the criteria specified in § 86.177–19.

§ 600.609–77 EPA driving cycles.

(a) The driving cycle to be utilized for generation of the city fuel economy data is prescribed in § 86.177–10.

(b) The driving cycle to be utilized for generation of the highway fuel economy data is specified in this paragraph.

(1) The Highway Fuel Economy Driving Schedule is Appendix I. The driving schedule is defined by a smooth trace drawn through the specific speed versus time relationships.

(2) The speed tolerance at any given time on the dynamometer driving schedule specified in Appendix I, or as printed on a driver's aid chart approved by the

Administrator, when conducted to meet the requirements of § 600.611–77(b) is defined by upper and lower limits. The upper limit is 2 mph higher than the highest point on the trace within 1 second of the given time. The lowest limit is 2 mph lower than the lowest point on the trace within 1 second of the given time. Speed variations greater than the tolerances (such as may occur during gear changes) are acceptable provided they occur for less than 2 seconds on any occasion. Speeds lower than those prescribed are acceptable provided the vehicle is operated at maximum available power during such occurrences.

(3) A graphic representation of the range of acceptable speed tolerances is found in Appendix I to Part 86.

§ 600.610–77 Equipment calibration.

The equipment used for fuel economy testing must be calibrated according to the provisions of § 86.177–19.

§ 600.611–77 Test procedures.

(a) The test procedures to be followed for generation of the city fuel economy data are those prescribed in Subpart B of Part 86 as applicable. (The evaporative loss portion of the test procedure may be omitted unless specifically required by the Administrator).

(b) The test procedures to be followed for generation of the highway fuel economy data are those specified in § 600.611–77 (b) through (h) inclusive.

(1) The Highway Fuel Economy Dynamometer Procedure consists of a preconditioning highway driving sequence and a measured highway driving sequence.

(2) The highway fuel economy test is designed to simulate nonmetropolitan driving with an average speed of 48.6 mph and a maximum speed of 60 mph. The cycle is 10.2 miles long with 0.2 stops per mile and consists of warmed-up vehicle operation on a chassis dynamometer through a specified driving cycle. A proportional part of the diluted exhaust emissions is collected continuously for subsequent analysis using a constant volume (variable dilution) sampler. Diesel dilute exhaust is continuously analyzed for hydrocarbons using a heated sample line and analyzer.

(3) Except in cases of component malfunction or failure, all emission control systems installed on or incorporated in a new motor vehicle must be functioning during all procedures in this subpart. The Administrator may authorize maintenance to correct component malfunction or failure.

(c) Transmissions—The provisions of §§ 86.177–12 through 86.177–14 inclusive apply for vehicle transmission operation during highway fuel economy testing under this subpart, except that overdrive units may be shifted as recommended by the manufacturers.

(d) Road Load Power and Inertia Weight Determination—Section 86.177–11 applies for determination of road load power and inertia weight for highway fuel economy testing.

(e) Vehicle Preconditioning—The Highway Fuel Economy Dynamometer Procedure is designed to be performed immediately following the Federal Emission Test Procedure, (Subpart B of Part 86). When conditions allow the tests should be scheduled in this sequence. In the event tests cannot be scheduled within three hours of the Federal Emission Test Procedure (including the one hour hot soak evaporative loss test, if applicable) the vehicle should be preconditioned as follows:

(1) If the vehicle has experienced between three (3) and twenty-four (24) hours of soak (68°–86° F) since the completion of the Federal Emission Test Procedure, the vehicle must be preconditioned by running 50 mph on the dynamometer for 5 minutes, followed by the Highway Fuel Economy Dynamometer Procedure described in paragraph (f).

(2) If the vehicle has experienced more than 24 hours of soak (68°–86° F) since the completion of the Federal Emission Test Procedure, or perhaps of storage outdoors, or in environments where soak temperature is not controlled to 68°–86° F the vehicle must be preconditioned by running one hour on the Road Preconditioning Route, (§86–8(a)(1)) and one cycle of the EPA Urban Dynamometer Driving Schedule (§ 86.177–10) followed by the Highway Fuel Economy Dynamometer Procedure-paragraph (f).

(f) Highway Fuel Economy Dynamometer Procedure. (1) The dynamometer procedure consists of two cycles of the Highway Fuel Economy Driving Schedule (§ 600.609–77(b)) separated by 15 seconds of idle. The first cycle of the Highway Fuel Economy Driving Schedule is driven to precondition the test vehicle and the second is driven for the fuel economy measurement.

(2) The provisions of § 86–177–11 (b), (c), (d), (e), (f), (h), and (j) apply for fuel economy testing, except that the test vehicle may be used for dynamometer horsepower adjustment, subparagraph (j).

(3) Only one exhaust sample and one background sample are collected and analyzed for hydrocarbons (except diesel hydrocarbons which are analyzed continuously), carbon monoxide, and carbon dioxide.

(4) The fuel economy measurement cycle of the test includes two seconds of idle indexed at the beginning of the second cycle and two seconds of idle indexed at the end of the second cycle.

(g) Engine Starting and Restarting. (1) If the engine is not operating at the initiation of the highway fuel economy test (preconditioning cycle), the start-up procedure must be according to the manufacturer's recommended procedures.

(2) False starts and stalls during the preconditioning cycle must be treated as in § 86.177–15 (d) and (e). If the vehicle stalls during the measurement cycle of the highway fuel economy test, the test is voided, corrective action may be taken, and the vehicle may be rescheduled for testing. The person taking the corrective action shall report the action so that the test records for the vehicle contain a record of the action.

(h) Dynamometer Test Run—The following steps must be taken for each test:

(1) Place the drive wheels of the vehicle on the dynamometer. The vehicle may be driven onto the dynamometer.

(2) Open the vehicle engine compartment cover and position the cooling fan(s) as required. Manufacturers may request the use of additional cooling fans for additional engine compartment or under-vehicle cooling and for controlling high tire or brake temperatures during dynamometer operation.

(3) Preparation of the Constant Volume Sampler (CVS) must be performed before the measurement highway driving cycle.

(4) Equipment preparation—The provisions of § 86.177–20(b) (3) through (6) inclusive apply for the highway fuel economy test except that only one exhaust sample collection bag and one dilution air sample collection bag need be connected to the sample collection systems.

(5) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.609–77(b).

(6) When the vehicle reaches zero speed at the end of the preconditioning cycle, the driver has 13 seconds to prepare for the emission measurement cycle of the test.

(7) Operate the vehicle over one Highway Fuel Economy Driving Schedule cycle according to the dynamometer driving schedule specified in § 600.609–77(b) while sampling the exhaust gas.

(8) Sampling must begin two seconds before beginning the first acceleration of the fuel economy measurement cycle and must end two seconds after the end of the deceleration to zero.

§ 600.612–77 Exhaust sample analysis.

The exhaust sample analysis must be performed according to § 86.177–19(b).

§ 600.613–77 Fuel economy calculations.

The calculations of vehicle fuel economy values require the weighted grams/mile values for HC, CO, and CO_2 for the city fuel economy test and the grams/mile values for HC, CO, and CO_2 for the highway fuel economy test. The city and highway fuel economy values must be calculated by the procedures of this section. A sample calculation appears in Appendix II.

(a) Calculate the weighted grams/mile values for the city fuel economy test for HC, CO, and CO_2 as specified in § 86.177–22.

(b) (1) Calculate the mass values for the highway fuel economy test for HC, CO, and CO_2 as specified in § 86.177–22(b).

(2) Calculate the grams/mile values for the highway fuel economy test for

HC, CO, and CO_2 by dividing the mass values obtained in (b)(1) by 10.242 miles.

(c) Calculate the city fuel economy and highway fuel economy values from the grams/mile values for HC, CO, and CO_2. The HC values (obtained per paragraph (a) o r (b) as applicable) used in each calculation in this section are rounded to the nearest 0.01 grams/mile. The CO values (obtained per paragraph (a) or (b) as applicable) used in each calculation in this section are rounded to 0.1 grams/mile. The CO_2 values (obtained per paragraph (a) or (b) as applicable) used in each calculation in this section are rounded to the nearest gram/mile.

(d) For gasoline-fueled automobiles, calculate the fuel economy in miles per gallon of gasoline by dividing 2421 by the sum of three items:

(1) 0.866 multiplied by HC (in grams/mile as obtained in paragraph (c)),

(2) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (c)), and

(3) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (c)).

Round the quotient to the nearest 0.1 mile per gallon.

(e) For diesel powered automobiles, calculate the fuel economy in miles per gallon of diesel fuel by dividing 2778 by the sum of three terms:

(1) 0.866 multiplied in HC (in grams/mile as obtained in paragraph (c)),

(2) 0.429 multiplied by CO (in grams/mile as obtained in paragraph (c)), and

(3) 0.273 multiplied by CO_2 (in grams/mile as obtained in paragraph (c)).

Round the quotient to the nearest 0.1 mile per gallon.

APRIL 22, 1974.

APPENDIX I.—HIGHWAY FUEL ECONOMY DRIVING SCHEDULE

[Speed (miles per hour) versus time (seconds)]

s	mi/h	s	mi/h	s	mi/h
0	(1)	38	36.5	76	47.1
1	0.0	39	36.7	77	47.2
2	0.0	40	36.9	78	47.0
3	2.0	41	37.0	79	46.9
4	4.9	42	37.0	80	46.9
5	8.1	43	37.0	81	46.9
6	11.3	44	37.0	82	47.0
7	14.5	45	37.0	83	47.1
8	17.3	46	37.0	84	47.1
9	19.6	47	37.1	85	47.2
10	21.8	48	37.3	86	47.1
11	24.0	49	37.8	87	47.0
12	25.8	50	38.6	88	46.9
13	27.1	51	39.3	89	46.5
14	28.0	52	40.0	90	46.3
15	29.0	53	40.7	91	46.2
16	30.0	54	41.4	92	46.3
17	30.7	55	42.2	93	46.5
18	31.5	56	42.9	94	46.9
19	32.2	57	43.5	95	47.1
20	32.4	58	44.0	96	47.4
21	33.5	59	44.3	97	47.7
22	34.1	60	44.5	98	48.0
23	34.6	61	44.8	99	48.2
24	34.9	62	44.9	100	48.5
25	35.1	63	45.0	101	48.8
26	35.7	64	45.1	102	49.1
27	35.9	65	45.4	103	49.2
28	35.8	66	45.7	104	49.1
29	35.3	67	46.0	105	49.1
30	34.9	68	46.3	106	49.0
31	34.5	69	46.5	107	49.0
32	34.5	70	46.8	108	49.1
33	34.8	71	46.9	109	49.2
34	35.1	72	47.0	110	49.3
35	35.7	73	47.1	111	49.4
36	36.1	74	47.2	112	49.5
37	36.2	75	47.3	113	49.5

APPENDIX I.—HIGHWAY FUEL ECONOMY DRIVING SCHEDULE—Continued

s	mi/h	s	mi/h	s	mi/h
114	49.5	219	42.7	324	48.3
115	49.4	220	43.1	325	49.0
116	49.1	221	43.2	326	49.7
117	48.9	222	43.4	327	50.3
118	48.6	223	43.9	328	51.0
119	48.4	224	44.3	329	51.7
120	48.1	225	44.7	330	52.4
121	47.7	226	45.1	331	53.1
122	47.4	227	45.4	332	53.8
123	47.3	228	45.8	333	54.5
124	47.5	229	46.5	334	55.2
125	47.8	230	46.9	335	55.8
126	47.9	231	47.2	336	56.4
127	48.0	232	47.4	337	56.9
128	47.9	233	47.3	338	57.0
129	47.9	234	47.3	339	57.1
130	47.9	235	47.2	340	57.3
131	48.0	236	47.2	341	57.6
132	48.0	237	47.2	342	57.8
133	48.0	238	47.1	343	58.0
134	47.9	239	47.0	344	58.1
135	47.3	240	47.0	345	58.4
136	46.0	241	46.9	346	58.7
137	43.3	242	46.8	347	58.8
138	41.2	243	46.9	348	58.9
139	39.5	244	47.0	349	59.0
140	39.2	245	47.2	350	59.0
141	39.0	246	47.5	351	58.9
142	39.0	247	47.9	352	58.8
143	39.1	248	48.0	353	58.6
144	39.5	249	48.0	354	58.4
145	40.1	250	48.0	355	58.2
146	41.0	251	48.0	356	58.1
147	42.0	252	48.0	357	58.0
148	43.1	253	48.1	358	57.9
149	43.7	254	48.2	359	57.6
150	44.1	255	48.2	360	57.4
151	44.3	256	48.1	361	57.2
152	44.4	257	48.6	362	57.1
153	44.6	258	48.9	363	57.0
154	44.7	259	49.1	364	57.0
155	44.9	260	49.1	365	56.9
156	45.2	261	49.1	366	56.9
157	45.7	262	49.1	367	56.9
158	45.9	263	49.1	368	57.0
159	46.3	264	49.0	369	57.0
160	46.8	265	48.9	370	57.0
161	46.9	266	48.2	371	57.0
162	47.0	267	47.7	372	57.0
163	47.1	268	47.5	373	57.0
164	47.6	269	47.2	374	57.0
165	47.9	270	46.7	375	57.0
166	48.0	271	46.2	376	57.0
167	48.0	272	46.0	377	56.9
168	47.9	273	45.8	378	56.8
169	47.8	274	45.6	379	56.5
170	47.3	275	45.4	380	56.2
171	46.7	276	45.2	381	56.0
172	46.2	277	45.0	382	56.0
173	46.9	278	44.7	383	56.0
174	45.7	279	44.5	384	56.1
175	45.5	280	44.2	385	56.4
176	45.4	281	43.5	386	56.7
177	45.3	282	42.8	387	56.9
178	45.0	283	42.0	388	57.1
179	44.0	284	40.1	389	57.3
180	43.1	285	38.6	390	57.4
181	42.2	286	37.5	391	57.4
182	41.5	287	35.8	392	57.2
183	41.5	288	34.7	393	57.0
184	42.1	289	34.0	394	56.9
185	42.9	290	33.3	395	56.6
186	43.5	291	32.5	396	56.3
187	43.9	292	31.7	397	56.1
188	43.8	293	30.6	398	56.4
189	43.3	294	29.6	399	56.7
190	43.0	295	28.8	400	57.1
191	43.1	296	28.4	401	57.5
192	43.4	297	28.6	402	57.8
193	43.9	298	29.5	403	58.0
194	44.3	299	31.4	404	58.0
195	44.6	300	33.4	405	58.0
196	44.9	301	35.6	406	58.0
197	44.8	302	37.5	407	58.0
198	44.4	303	39.1	408	58.0
199	43.9	304	40.2	409	57.9
200	43.4	305	41.1	410	57.8
201	43.2	306	41.8	411	57.7
202	43.2	307	42.4	412	57.7
203	43.1	308	42.8	413	57.8
204	43.0	309	43.3	414	57.9
205	43.0	310	43.8	415	58.0
206	43.1	311	44.3	416	58.1
207	43.4	312	44.7	417	58.4
208	43.9	313	45.0	418	58.9
209	44.0	314	45.2	419	59.1
210	43.5	315	45.4	420	59.4
211	42.6	316	45.5	421	59.8
212	41.5	317	45.8	422	59.9
213	40.7	318	46.0	423	59.9
214	40.0	319	46.1	424	59.8
215	40.0	320	46.5	425	59.6
216	40.3	321	46.8	426	59.4
217	41.0	322	47.1	427	59.2
218	42.0	323	47.7	428	59.1

APPENDIX I.—HIGHWAY FUEL ECONOMY DRIVING SCHEDULE—Continued

s	mi/h	s	mi/h	s	mi/h
429	59.0	534	56.0	639	48.2
430	58.9	535	56.0	640	46.5
431	58.7	536	56.0	641	46.2
432	58.6	537	56.0	642	46.0
433	58.5	538	56.0	643	46.0
434	58.4	539	56.0	644	46.3
435	58.4	540	56.0	645	46.8
436	58.3	541	56.0	646	47.5
437	58.2	542	56.0	647	48.2
438	58.1	543	56.0	648	48.8
439	58.0	544	56.0	649	49.5
440	57.9	545	56.0	650	50.2
441	57.9	546	56.0	651	50.7
442	57.9	547	55.9	652	51.1
443	57.9	548	55.9	653	51.7
444	57.9	549	55.9	654	52.2
445	58.0	550	55.8	655	52.5
446	58.1	551	55.6	656	52.1
447	58.1	552	55.4	657	51.6
448	58.2	553	55.2	658	51.1
449	58.2	554	55.1	659	51.0
450	58.2	555	55.0	660	51.0
451	58.1	556	54.9	661	51.1
452	58.0	557	54.6	662	51.4
453	58.0	558	54.4	663	51.7
454	58.0	559	54.2	664	52.0
455	58.0	560	54.1	665	52.2
456	58.0	561	53.8	666	52.5
457	58.0	562	53.4	667	52.8
458	57.9	563	53.3	668	52.7
459	57.9	564	53.1	669	52.6
460	58.0	565	52.9	670	52.3
461	58.1	566	52.6	671	52.3
462	58.1	567	52.4	672	52.4
463	58.2	568	52.2	673	52.5
464	58.3	569	52.1	674	52.7
465	58.3	570	52.0	675	52.7
466	58.3	571	52.0	676	52.4
467	58.2	572	52.0	677	52.1
468	58.1	573	52.0	678	51.7
469	58.0	574	52.1	679	51.1
470	57.8	575	52.0	680	50.5
471	57.5	576	52.0	681	50.1
472	57.1	577	51.9	682	49.8
473	57.0	578	51.6	683	49.7
474	56.6	579	51.4	684	49.6
475	56.1	580	51.1	685	49.5
476	56.0	581	50.7	686	49.5
477	55.8	582	50.3	687	49.7
478	55.5	583	49.8	688	50.0
479	55.2	584	49.3	689	50.2
480	55.1	585	48.7	690	50.6
481	55.0	586	48.2	691	51.1
482	54.9	587	48.1	692	51.6
483	54.9	588	48.0	693	51.9
484	54.9	589	48.0	694	52.0
485	54.9	590	48.1	695	52.1
486	54.9	591	48.4	696	52.4
487	54.9	592	48.9	697	52.9
488	55.0	593	49.0	698	53.3
489	55.0	594	49.1	699	53.7
490	55.0	595	49.1	700	54.2
491	55.0	596	49.0	701	54.5
492	55.0	597	49.0	702	54.8
493	55.0	598	48.9	703	55.0
494	55.1	599	48.6	704	55.5
495	55.1	600	48.3	705	55.9
496	55.0	601	48.0	706	56.1
497	54.9	602	47.9	707	56.3
498	54.9	603	47.8	708	56.4
499	54.8	604	47.7	709	56.5
500	54.7	605	47.9	710	56.7
501	54.6	606	48.3	711	56.9
502	54.4	607	49.0	712	57.0
503	54.3	608	49.1	713	57.3
504	54.3	609	49.0	714	57.7
505	54.2	610	48.9	715	58.2
506	54.1	611	48.0	716	58.8
507	54.1	612	47.1	717	59.1
508	54.1	613	46.2	718	59.2
509	54.0	614	46.1	719	59.1
510	54.0	615	46.1	720	58.8
511	54.0	616	46.2	721	58.5
512	54.0	617	46.9	722	58.1
513	54.0	618	47.8	723	57.7
514	54.0	619	49.0	724	57.3
515	54.0	620	49.7	725	57.1
516	54.0	621	50.6	726	56.8
517	54.1	622	51.5	727	56.5
518	54.2	623	52.2	728	56.2
519	54.5	624	52.7	729	55.5
520	54.8	625	53.0	730	54.6
521	54.9	626	53.6	731	54.1
522	55.0	627	54.0	732	53.7
523	55.1	628	54.1	733	53.2
524	55.2	629	54.4	734	52.9
525	55.2	630	54.7	735	52.5
526	55.3	631	55.1	736	52.0
527	55.4	632	55.4	737	51.3
528	55.5	633	55.4	738	50.5
529	55.6	634	55.0	739	49.5
530	55.7	635	54.5	740	48.5
531	55.8	636	53.6	741	47.6
532	55.9	637	52.5	742	46.8
533	56.0	638	50.2	743	46.6

APPENDIX I.—HIGHWAY FUEL ECONOMY DRIVING SCHEDULE—Continued

s	mi/h	s	mi/h	s	mi/h
744	44.2	752	21.5	760	3.3
745	42.5	753	19.5	761	2.0
746	39.2	754	17.4	762	0.7
747	35.9	755	15.1	763	0.0
748	32.6	756	12.4	764	0.0
749	29.3	757	9.7	765	(*)
750	26.8	758	7.0		
751	24.6	759	5.0		

APPENDIX II.—SAMPLE TEST VALUE CALCULATIONS

(a) Assume that a gasoline-fueled vehicle was tested by the Federal Emission Test Procedure and the following results were calculated:

HC=1.03 grams/mile
CO=6.74 grams/mile
CO_2=785 grams/mile

According to the procedure in § 600.613-77, the city fuel economy or MPG_c for the vehicle may be calculated by substituting the HC, CO, and CO_2 gram/mile values into the following equation.

$$MPG_c = \frac{2421}{(0.866 \times HC) + (0.429 \times CO) + (0.273 \times CO_2)}$$

$$= \frac{2421}{(0.866 \times 1.03) + (0.429 \times 6.74) + (0.273 \times 785)}$$

$$= \frac{2421}{218.1}$$

$$= 11.1 \text{ MPG}$$

(b) Assume that the same vehicle was tested by the Federal Highway Fuel Economy Test Procedure and a calculation similar to that shown in (a) resulted in a highway fuel economy or MPG_h of 18.6. According to the procedure in § 600.613-77, the combined fuel economy (called $MPG_{c/h}$) for the vehicle may be calculated by substituting the city and highway fuel economy values into the following equation:

$$MPG_{c/h} = \frac{1}{\frac{0.55}{MPG_c} + \frac{0.45}{MPG_h}}$$

$$= \frac{1}{\frac{0.55}{11.1} + \frac{0.45}{18.6}}$$

$$= \frac{1}{0.0737}$$

$$MPG_{c/h} = 13.6 \text{ MPG}$$

APPENDIX III.—SAMPLE FUEL ECONOMY LABEL CALCULATION

Suppose that a manufacturer called Mizer Motors has a product line composed of eight car lines. Of these eight, four are available with the 300 CID, 2 barrel, noncatalyst, 49-state engine.

These four car lines are: Ajax, Boredom III, Dodo, Castor (Station Wagon).

A car line is defined in subpart A as a group of vehicles within a make or division which has a degree of commonality in construction. Car line does not consider any level of decor or opulence and is not generally distinguished by such characteristics as roofline, number of doors, seats, or windows. Station wagons and light-duty trucks are, however, identified separately from the remainder of each car line. In other words, a Castor station wagon would be considered a different car line than the normal Castor car line made up of sedans, coupes, etc.

The engine considered here is defined as a basic engine in subpart A. A basic engine is a unique combination of fuel system, number of cylinders, catalyst usage, and engine displacement.

A model type is a unique combination of car line, basic engine, and transmission class. Thus Ajax is a car line but Ajax 300-2V non-catalyst, 49-state, manual transmission is a model type whereas Ajax 300-2V noncatalyst, 49-state, automatic transmission is a different model type.

The following calculations provide an example of the procedures described in Subpart C of this part for the calculation of vehicle configuration and model type fuel economy value. In order to simplify the presentation, only city fuel economy values are included. The procedure is identical for highway and combined fuel economy values.

Step I. *Input data as supplied by the manufacturer or as determined from testing conducted by the Administrator.*

[Manufacturer: Mizer Motors. Basic engine: 300-2 barrel, 8-cylinder, noncatalyst, 49 State]

Test vehicle carline	Engine code	Transmission	Inertia weight	Axle ratio	Average (mile per gallon)	Label (miles per gallon)[1]	Vehicle configuration sales
Ajax	1	M-3	3,500	2.73	16.1	16	15,000
Do	2	A-3	3,500	2.56	15.9	16	35,000
Boredom III	4	M-3	4,000	3.08	14.2	14	10,000
Ajax	3	M-4	4,000	3.36	15.0	15	15,000
Boredom III	8	A-3	4,000	2.56	13.8	14	25,000
Do	6	A-3	4,500	3.08	13.2	13	20,000
Castor	5	A-3	5,000	3.08	10.6	11	40,000

[1] The vehicle configuration fuel economy values, rounded to the nearest mile per gallon, are the fuel economy values that would be used on specific labels for that vehicle configuration.

Step II. *Group vehicle fuel economy and sales data according to base level combinations within this basic engine.*

Base level	Transmission	Inertia weight	Miles per gallon	Projected vehicle configuration sales
A	Manual-3	3,500	16.1	15,000
B	Automatic	3,500	15.9	35,000
C	Manual-3	4,000	14.2	10,000
C	Manual-4	4,000	15.0	15,000
D	Automatic	4,000	13.8	25,000
E	do	4,500	13.2	20,000
F	do	5,000	10.6	40,000

Step III. *Determine base level fuel economy values.*

A. For all the base levels except the base level which includes 4000 pound, manual transmission data, the base level fuel economy is as noted in Step II since only one vehicle configuration was tested within each of these base levels.

	Miles per gallon
3,500 lb manual transmission	16.1
3,500 lb automatic transmission	15.9
4,000 lb automatic transmission	13.8
4,500 lb automatic transmission	13.2
5,000 lb automatic transmission	10.6

B. Since data from more than one vehicle configuration are included in the 4000-pound, manual transmission base level, this fuel economy is harmonically averaged in proportion to the percentage of total sales of all vehicle configurations tested within that base level represented by each vehicle configuration tested within that base level.

$$\text{Base Level Fuel-Economy} = \frac{1}{\frac{\text{Fraction of total sales of configurations tested represented by configuration No. 1 sales}}{\text{Configuration No. 1 fuel economy}} + \frac{\text{Fraction of total sales of configurations tested represented by configuration No. 2 sales}}{\text{Configuration No. 2 fuel economy}} + \ldots}$$

Base Level: Manual, 4000 pounds

$$\frac{1}{\frac{10000}{25000}\frac{1}{14.2}+\frac{15000}{25000}\frac{1}{1.50}} = 14.7 \text{ MPG}$$

Therefore, the 4000 pound/ manual transmission fuel economy is 14.7 MPG.

4000 pound/manual transmission=14.7 MPG

Note that the car line of the test vehicle using a given engine makes no difference—only the weight and transmission do.

Step IV. *For each model type offered by the manufacturer with that basic engine, determine the sales percent represented by each inertia weight/transmission class combination and the corresponding fuel economy.*

Ajax:	
Manual—100 pct at 3,500 lb	16.1
Automatic—30 pct at 3,500 lb	15.9
Automatic—70 pct at 4,000 lb	13.8
Dodo:	
Manual—40 pct at 3,500 lb	16.1
Manual—60 pct at 4,000 lb	14.7
Automatic—30 pct at 3,500 lb	15.9
Automatic—70 pct at 4,000 lb	13.8
Boredom III:	
Manual—100 pct at 4,000 lb	14.7
Automatic—25 pct at 4,000 lb	13.8
Automatic—75 pct at 4,500 lb	13.2
Castor:	
Automatic—20 pct at 4,500 lb	13.2
Automatic—80 pct at 5,000 lb	10.6

Step V. *Determine fuel economy for each model type (that is, car line/basic engine/transmission class combination).*

$$\text{Ajax, 300-2 barrel, automatic, MPG} = \frac{1}{\left[30.00\left(\frac{1}{15.9}\right)+70.00\left(\frac{1}{13.8}\right)\right]\div 100} = 14.4 \text{ MPG}$$

The percent of Ajax vehicles using the specific engine which fall in the 3500/pound automatic transmission class

Fuel Economy for 3500 pound/automatic transmission

Similarly,

Ajax, 300-2 barrel, manual MPG = 16.1 16 MPG*

$$\text{Dodo, 300-2 barrel, manual MPG} = \frac{1}{\left[40.00\left(\frac{1}{16.1}\right)+60.00\left(\frac{1}{14.7}\right)\right]\div 100} = 15.2, 15 \text{ MPG*}$$

$$\text{Dodo, 300-2 barrel, automatic MPG} = \frac{1}{\left[30.00\left(\frac{1}{15.9}\right)+70.00\left(\frac{1}{13.8}\right)\right]\div 100} = 14.4, 14 \text{ MPG*}$$

Boredom III, 300-2 barrel, manual MPG = 14.7, 15 MPG*

$$\text{Boredom III, 300-2 barrel, automatic MPG} = \frac{1}{\left[25.00\left(\frac{1}{13.8}\right)+75.00\left(\frac{1}{13.2}\right)\right]\div 100} = 13.3, 13 \text{ MPG*}$$

$$\text{Castor, 300-2 barrel, automatic MPG} = \frac{1}{\left[20.00\left(\frac{1}{13.2}\right)+80.00\left(\frac{1}{10.6}\right)\right]\div 100} = 11.0, 11 \text{ MPG*}$$

Note that even though no Dodo was actually tested, this approach permits its fuel economy figure to be estimated, based on the inertia weight distribution of projected Dodo sales within a specific engine and transmission grouping.

* The model type fuel economy values, rounded to the nearest mile per gallon, are the fuel economy values as used on general labels for that model year.

APPENDIX IV.—SAMPLE FUEL ECONOMY LABEL FORMATS

The following sample fuel economy labels represent formats and language which would be approved by the Administrator for various labeling schemes. Of course, the actual vehicle description, vehicle class, fuel economy values, and annual fuel costs would correspond to the appropriate information approved for the labeled vehicle. Additionally, the range of combined fuel economy, the effective date of the range, the fuel cost per gallon, and the miles driven per year would be as specified by the Administrator at the time of label approval.

GENERAL LABEL WITH RANGE

Based on the results of tests conducted or certified by the U.S. Environmental Protection Agency, the typical gas mileage of this car is estimated to be:

Vehicle: Ajax, 8 cylinder, 300 cubic inch displacement, 2 barrel carburetor, automatic transmission, catalyst equipped

10 miles per gallon for city driving
16 miles per gallon for highway driving and
14 miles per gallon for combined city and highway driving

As of October 15, 1976, the combined city and highway fuel economy for other Class A vehicles ranged from 8 to 20 miles per gallon.

Based on $.65 per gallon, 10,000 miles driven per year, and an average combined fuel economy of 14 miles per gallon, the estimated annual fuel cost for this vehicle is $464.

These estimates are based on tests of vehicles equipped with frequently purchased optional equipment.

Reminder: The actual fuel economy of this car will vary depending on the type of driving you do, your driving habits, how well you maintain your car, optional equipment installed and used, and road and weather conditions.

To compare the fuel economy of this car with other 1977 cars, and to learn how the tests were conducted, ask your dealer for a free copy of the EPA/FEA "1977 Gas Mileage Guide for New Car Buyers."

Based on the results of tests conducted or certified by the U.S. Environmental Protection Agency, the typical gas mileage of this car is estimated to be:

Vehicle: Ajax, 8 cylinder, 300 cubic inch displacement, 2 barrel carburetor, automatic transmission, catalyst equipped

10 miles per gallon for city driving
16 miles per gallon for highway driving and
14 miles per gallon for combined city and highway driving

As of the date this vehicle was built (or imported), a range of combined city and highway fuel economy for Class A vehicles was not available.

Based on $.65 per gallon, 10,000 miles driven per year, and an average combined fuel economy of 14 miles per gallon, the estimated annual fuel cost for this vehicle is $464.

These estimates are based on tests of vehicles equipped with frequently purchased optional equipment.

Reminder: The actual fuel economy of this car will vary depending on the type of driving you do, your driving habits, how well you maintain your car, optional equipment installed and used, and road and weather conditions.

To compare the fuel economy of this car with other 1977 cars, and to learn how the tests were conducted, ask your dealer for a free copy of the EPA/FEA "1977 Gas Mileage Guide for New Car Buyers."

Based on the results of tests conducted or certified by the U.S. Environmental Protection Agency, the typical gas mileage of this car is estimated to be:

Vehicle: Ajax, 8 cylinder, 300 cubic inch displacement, 2 barrel carburetor, automatic transmission, catalyst equipped, California emission control system

10 miles per gallon for city driving
16 miles per gallon for highway driving and
14 miles per gallon for combined city and highway driving.

As of October 15, 1976, the combined city and highway fuel economy for other Class A vehicles ranged from 8 to 20 miles per gallon.

Based on $.65 per gallon, 10,000 miles driven per year, and an average combined fuel economy of 14 miles per gallon, the estimated annual fuel cost for this vehicle is $464.

These estimates are based on tests of vehicles equipped with frequently purchased optional equipment.

Reminder: The actual fuel economy of this car will vary depending on the type of driving you do, your driving habits, how well you maintain your car, optional equipment installed and used, and road and weather conditions.

To compare the fuel economy of this car with other 1977 cars, and to learn how the tests were conducted, ask your dealer for a free copy of the EPA/FEA "1977 Gas Mileage Guide for New Car Buyers."

Based on the results of tests conducted or certified by the U.S. Environmental Protection Agency, the typical gas mileage of this car is estimated to be:

Vehicle: Ajax, 8 cylinder, 300 cubic inch displacement, 2 barrel carburetor, automatic transmission, catalyst equipped, 4,000 pounds test weight, 3.02 axle ratio

10 miles per gallon for city driving
16 miles per gallon for highway driving and
14 miles per gallon for combined city and highway driving
These fuel economy numbers are from tests of this vehicle configuration and may not be in the EPA/FEA Buyer's Guide.

As of October 15, 1976, the combined city and highway fuel economy for other Class A vehicles ranged from 8 to 20 miles per gallon. The range on this label is based upon average fuel economy results, and does not reflect the range of tests of specific vehicle configurations.

Based on $.65 per gallon, 10,000 miles driven per year, and an average combined fuel economy of 14 miles per gallon, the estimated annual fuel cost for this vehicle is $464.

These estimates are based on tests of vehicles equipped with frequently purchased optional equipment.

Reminder: The actual fuel economy of this car will vary depending on the type of driving you do, your driving habits, how well you maintain your car, optional equipment installed and used, and road and weather conditions.

To compare the fuel economy of this car with other 1977 cars, and to learn how the tests were conducted, ask your dealer for a free copy of the EPA/FEA "1977 Gas Mileage Guide for New Car Buyers".

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